

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Laura Waver Examiner #: 71724 Date: 10-29-03  
Art Unit: 1745 Phone Number 30 84396 Serial Number: 09/903750  
Mail Box and Bldg/Room Location: 8E10 Results Format Preferred (circle) PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

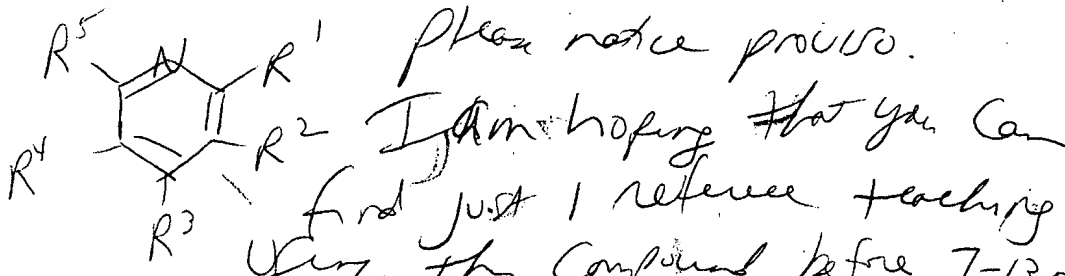
\*\*\*\*\*  
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See From Sheet  
Inventors (please provide full names): See From Sheet

Earliest Priority Filing Date:                     

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Could you do a structural search + search for an electrolyte solution comprising an organic solvent, a lithium salt & further contains a pyridine compound of formula (I)



9 even better if before 7-14-00. Thanks,  
Laura

## STAFF USE ONLY

Searcher: K. Fuller  
Searcher Phone #:                       
Searcher Location:                       
Date Searcher Picked Up:                       
Date Completed: 10/30/03  
Searcher Prep & Review Time: 20  
Clerical Prep Time:                       
Online Time: 45

### Type of Search

NA Sequence (#)                       
AA Sequence (#)                       
Structure (#) 1  
Bibliographic                       
Litigation                       
Fulltext                       
Patent Family                       
Other                     

### Vendors and cost where applicable

STN                       
Dialog                       
Questel/Orbit                       
Dr. Link                       
Lexis/Nexis                       
Sequence Systems                       
WWW/Internet                       
Other (specify)

=> FILE REG

FILE 'REGISTRY' ENTERED AT 16:38:26 ON 30 OCT 2003  
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Property values tagged with IC are from the ZIC/VINITI data file  
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STRUCTURE FILE UPDATES: 29 OCT 2003 HIGHEST RN 610749-29-6  
DICTIONARY FILE UPDATES: 29 OCT 2003 HIGHEST RN 610749-29-6

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. See HELP  
PROPERTIES for more information. See STN Note 27, Searching Properties  
in the CAS Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> FILE HCAPLUS

FILE 'HCAPLUS' ENTERED AT 16:38:31 ON 30 OCT 2003  
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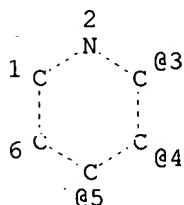
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FILE COVERS 1907 - 30 Oct 2003 VOL 139 ISS 18  
FILE LAST UPDATED: 29 Oct 2003 (20031029/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

=> D QUE L26

L3 STR



379 structures

A @7

VPA 7-3/4/5 U

NODE ATTRIBUTES:

NSPEC IS RC AT 7

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L14 36196 SEA FILE=HCAPLUS ABB=ON BATTER?(L)ELECTROLYT?

L15 SEL L14 1- RN : 36335 TERMS

L16 36311 SEA FILE=REGISTRY ABB=ON L15

L18 379 SEA FILE=REGISTRY SUB=L16 SSS FUL L3

L19 79379 SEA FILE=HCAPLUS ABB=ON L18

L21 407 SEA FILE=HCAPLUS ABB=ON L19(L)ELECTROLYT?

L23 131 SEA FILE=HCAPLUS ABB=ON L21 AND (LI OR LITHIUM)

L24 38 SEA FILE=HCAPLUS ABB=ON L23 AND (NON(W)AQUEOUS OR NONAQUEOUS)

L25 9 SEA FILE=HCAPLUS ABB=ON L23 AND ORG?(2A) SOLVENT#

L26 45 SEA FILE=HCAPLUS ABB=ON L24 OR L25

=> D L26 ALL 1-45 HITSTR

45 CA references with utility

L26 ANSWER 1 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2003:434874 HCAPLUS

DN 138:409145

TI Electrolyte containing basic amine and electrochromic device

IN Ohshima, Shinji; Minami, Masaki; Tanimoto, Junichiro; Kubo, Takaya; Nishikitani, Yoshinori

PA Nippon Oil Corporation, Japan

SO PCT Int. Appl., 40 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

IC ICM G02F001-15

ICS H01B001-06; H01M010-40

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 72, 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003046653	A1	20030605	WO 2002-JP12444	20021128
	W: US				
	RW: DE, FR, GB				
	JP 2003161963	A2	20030606	JP 2001-364378	20011129
	JP 2003281932	A2	20031003	JP 2002-80693	20020322
PRAI	JP 2001-364378	A	20011129		
	JP 2002-80693	A	20020322		

AB The invention refers to an electrolyte comprising a support electrolyte, an **organic solvent**, and a basic amine, exhibiting high ion conductivity, no liquid leakage, excellent flame resistance, transparency, and

applicable to various uses, for enabling the manufacture of an electrochem. device by a simple method. The electrochromic device comprises an electrolyte layer interposed between two transparent conductive substrates, wherein an electrochromic layer is placed on at least one of the two transparent conductive substrates, and the electrolyte layer contains a basic amine compound in order to improve device performance such as coloring/discoloring response and durability are improved irrespectively of the phys. properties of the electrochromic layer.

ST Electrolyte electrochromic imaging device

IT Electrochromic imaging devices

(LiF4B; electrolyte with basic amine and electrochromic device)

IT Electrolytes

(electrolyte with basic amine and electrochromic device)

IT 108-32-7, Propylene carbonate 110-86-1, Pyridine, uses 119-65-3, Isoquinoline **553-26-4**, 4,4'-Bipyridyl 2440-22-4 9011-17-0, KYNAR 2751 14283-07-9, **Lithium** tetrafluoroborate (LiBF4) 25721-76-0, Polyethylene glycol dimethacrylate 26915-72-0, Methoxy polyethylene glycol monomethacrylate 33454-82-9, **Lithium** trifluoromethane sulfonate 69673-85-4, 1-(4-Isopropylphenyl)-2-hydroxy-2-methylpropan-1-one 155812-81-0, **Lithium** trifluoromethane sulfonamide

RL: DEV (Device component use); USES (Uses)

(**electrolyte** with basic amine and electrochromic device)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Elna Co Ltd; JP 56-73423 A 1981 HCAPLUS

(2) Sanyo Electric Co Ltd; JP 02-15567 A 1990 HCAPLUS

(3) Sanyo Electric Co Ltd; JP 03-43960 A 1991 HCAPLUS

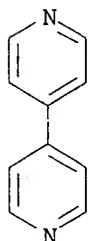
IT **553-26-4**, 4,4'-Bipyridyl

RL: DEV (Device component use); USES (Uses)

(**electrolyte** with basic amine and electrochromic device)

RN 553-26-4 HCAPLUS

CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 2 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2003:317640 HCAPLUS  
 DN 138:324047  
 TI Liquid-crystalline polysiloxanes and their uses in electrolyte compositions for (photo)electrochemical cells and secondary **nonaqueous** batteries  
 IN Yasuda, Takayasu; Wariishi, Koji  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 33 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01B001-06  
 ICS C08G077-48; H01M006-18; H01M010-40; H01M014-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38, 75, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003123531	A2	20030425	JP 2001-322124	20011019
PRAI	JP 2001-322124		20011019		

AB The electrolyte compns. contain liquid-crystalline polysiloxanes having repeating units  $[O(SiR_1R_2O)nL_1XL_2]$  ( $R_1, R_2$  = alkyl, alkoxy;  $L_1, L_2$  = divalent linking group, single bond;  $X$  = mesogen;  $R_1, R_2, L_1, L_2$ , and/or  $X$  has ionic substituent;  $n \geq 1$ ) and are used in electrochem. cells, charge-transporting layers in photoelectrochem. cells, and secondary **nonaq.** batteries. Liquid-crystalline polysiloxanes having repeating units  $[O(SiR_1R_2O)nL_1(Q_1YQ_2)n'L_2]$  ( $R_1, R_2$  = alkyl, alkoxy;  $L_1, L_2$  = C1-24 alkylene, alkyleneoxy, single bond;  $Q_1, Q_2$  = divalent linking group, single bond;  $Y$  = divalent 4-7 membered ring, its condensed ring;  $R_1, R_2, L_1, L_2$ , and/or  $Y$  has ionic substituent;  $n \geq 1$ ;  $n' = 1-3$ ) are also claimed. The cells and the batteries using the compns. have high durability, photoelec. conversion characteristics, cycle performance, etc.  
 ST electrochem cell liq crystal polysiloxane electrolyte; photoelectrochem cell liq crystal polysiloxane electrolyte; **nonaq** battery liq crystal polysiloxane electrolyte  
 IT Battery electrolytes  
 Electrochemical cells  
 Liquid crystals, polymeric  
 Photoelectrochemical cells  
 Polyelectrolytes  
 (liquid-crystalline polysiloxanes with ionic groups in electrolyte compns.  
 for (photo)electrochem. cells and secondary **nonaq.** batteries)

IT Polysiloxanes, uses  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (liquid-crystalline polysiloxanes with ionic groups in electrolyte compns.  
 for (photo)electrochem. cells and secondary **nonaq.** batteries)

IT Secondary batteries  
 (lithium; liquid-crystalline polysiloxanes with ionic groups in  
 electrolyte compns. for (photo)electrochem. cells and secondary  
**nonaq.** batteries)

IT 512773-47-6P  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (liquid-crystalline polysiloxanes with ionic groups in electrolyte compns.  
 for (photo)electrochem. cells and secondary **nonaq.** batteries)

IT 512773-51-2 **512773-53-4 512773-56-7**  
**512773-58-9** 512773-70-5 512773-73-8 512773-77-2  
 512773-92-1  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (liquid-crystalline polysiloxanes with ionic groups in **electrolyte**  
 compns. for (photo)electrochem. cells and secondary **nonaq.**  
 batteries)

IT **350507-46-9P** 512774-00-4P 512774-03-7P **512774-08-2P**  
**512774-14-0P**  
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (liquid-crystalline polysiloxanes with ionic groups in **electrolyte**  
 compns. for (photo)electrochem. cells and secondary **nonaq.**  
 batteries)

IT 108-59-8, Dimethyl malonate 627-32-7 **872-85-5**,  
 4-Pyridinecarboxaldehyde 4667-38-3, Dichlorodiethoxysilane 88088-72-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (liquid-crystalline polysiloxanes with ionic groups in **electrolyte**  
 compns. for (photo)electrochem. cells and secondary **nonaq.**  
 batteries)

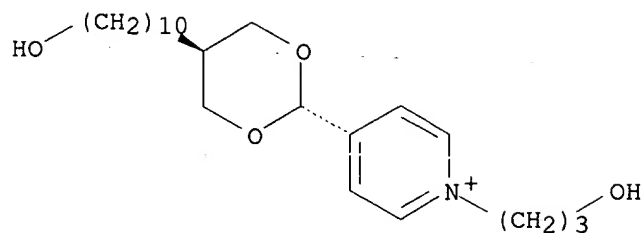
IT **512773-53-4 512773-56-7 512773-58-9**  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (liquid-crystalline polysiloxanes with ionic groups in **electrolyte**  
 compns. for (photo)electrochem. cells and secondary **nonaq.**  
 batteries)

RN 512773-53-4 HCAPLUS  
 CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-  
 hydroxypropyl)-, iodide, polymer with dichlorodiethoxysilane (9CI) (CA  
 INDEX NAME)

CM 1

CRN 512774-14-0  
 CMF C22 H38 N O4 . I

Relative stereochemistry.

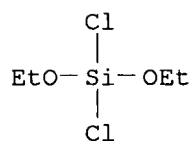


● I<sup>-</sup>

CM 2

CRN 4667-38-3

CMF C4 H10 Cl2 O2 Si



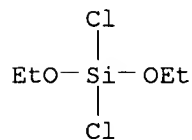
RN 512773-56-7 HCAPLUS

CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-hydroxypropyl)-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1), polymer with dichlorodiethoxysilane (9CI) (CA INDEX NAME)

CM 1

CRN 4667-38-3

CMF C4 H10 Cl2 O2 Si



CM 2

CRN 521276-31-3

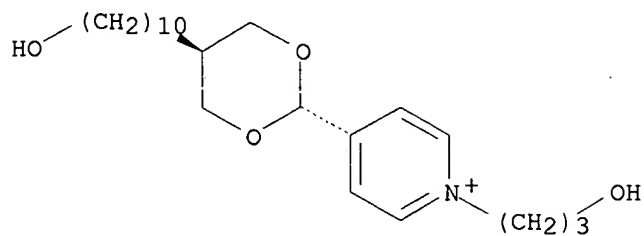
CMF C22 H38 N O4 . C2 F6 N O4 S2

CM 3

CRN 512773-55-6

CMF C22 H38 N O4

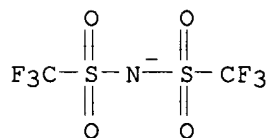
Relative stereochemistry.



CM 4

CRN 98837-98-0

CMF C2 F6 N O4 S2



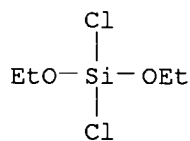
RN 512773-58-9 HCAPLUS

CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-hydroxypropyl)-, tetrafluoroborate(1-), polymer with dichlorodiethoxysilane (9CI) (CA INDEX NAME)

CM 1

CRN 4667-38-3

CMF C4 H10 Cl2 O2 Si



CM 2

CRN 521276-40-4

CMF C22 H38 N O4 . B F4

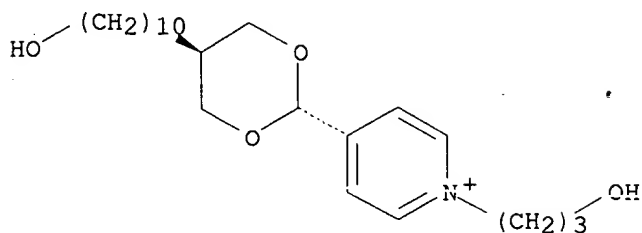
CM 3

CRN 512773-55-6

CMF C22 H38 N O4

Relative stereochemistry.



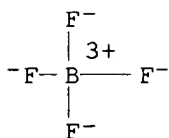


CM 4

CRN 14874-70-5

CMF B F4

CCI CCS



IT 350507-46-9P 512774-08-2P 512774-14-0P

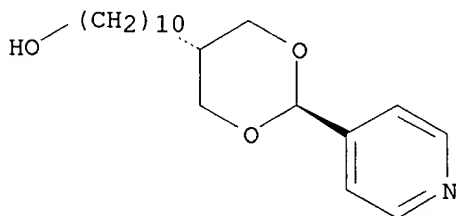
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(liquid-crystalline polysiloxanes with ionic groups in **electrolyte** compns. for (photo)electrochem. cells and secondary **nonaq.** batteries)

RN 350507-46-9 HCAPLUS

CN 1,3-Dioxane-5-decanol, 2-(4-pyridinyl)-, trans- (9CI) (CA INDEX NAME)

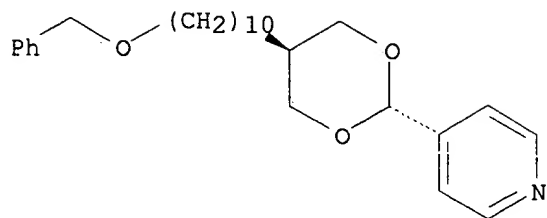
Relative stereochemistry.



RN 512774-08-2 HCAPLUS

CN Pyridine, 4-[trans-5-[10-(phenylmethoxy)decyl]-1,3-dioxan-2-yl]- (9CI) (CA INDEX NAME)

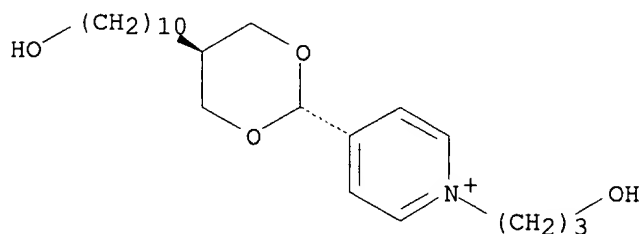
Relative stereochemistry.



RN 512774-14-0 HCAPLUS

CN Pyridinium, 4-[trans-5-(10-hydroxydecyl)-1,3-dioxan-2-yl]-1-(3-hydroxypropyl)-, iodide (9CI) (CA INDEX NAME)

Relative stereochemistry.



● I<sup>-</sup>

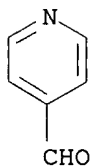
IT 872-85-5, 4-Pyridinecarboxaldehyde

RL: RCT (Reactant); RACT (Reactant or reagent)

(liquid-crystalline polysiloxanes with ionic groups in **electrolyte** compns. for (photo)electrochem. cells and secondary **nonaq.** batteries)

RN 872-85-5 HCAPLUS

CN 4-Pyridinecarboxaldehyde (9CI) (CA INDEX NAME)



L26 ANSWER 3 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2003:300775 HCAPLUS

DN 138:290461

TI Secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes

IN Okada, Mikio

PA Japan Storage Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58; H01M004-62  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003115324	A2	20030418	JP 2001-308766	20011004
PRAI	JP 2001-308766		20011004		

AB The batteries comprise  $\text{Li}_x\text{Ni}_y\text{Mn}_{2-y}\text{O}_4$  ( $x = 0-1$   $y = 0.45-0.6$ ) as cathodes, carbonaceous anodes, and **nonaq.** electrolytes; wherein nitrogen-containing unsatd. cyclic compds. are included in the electrolytes to improve charge-discharge cycling performance. A part of Ni or Mn in the compound oxides may have been substituted with Co, Fe, Zn, Al, or V.

ST **lithium** battery electrolyte nitrogen unsatd heterocycle additive

IT Battery cathodes  
 Battery electrolytes  
 Secondary batteries  
 (secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

IT 12031-75-3, **Lithium** manganese nickel oxide ( $\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_4$ )  
 444727-97-3, **Lithium** manganese nickel oxide ( $\text{LiO}-1\text{Mn}_{1.4}-1.55\text{Ni}_{0.45}-0.604$ )  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathodes; secondary **lithium** batteries using **lithium** nickel manganese oxide cathodes and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

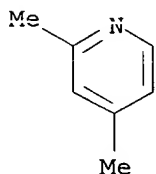
IT 108-47-4, 2,4-Dimethylpyridine 108-48-5,  
 2,6-Dimethylpyridine 109-97-7, Pyrrole 110-86-1, Pyridine, uses  
 120-73-0, Purine 288-13-1, Pyrazole 289-80-5, Pyridazine 289-95-2,  
 Pyrimidine 290-37-9, Pyrazine 372-47-4, 3-Fluoropyridine  
 372-48-5, 2-Fluoropyridine 583-58-4,  
 3,4-Dimethylpyridine 583-61-9, 2,3-Dimethylpyridine  
 589-93-5, 2,5-Dimethylpyridine 591-22-0,  
 3,5-Dimethylpyridine 5453-67-8, Dimethyl-2,6-pyridine  
 dicarboxylate 6269-24-5, Methyl-3-pyridyl carbamate  
 36118-45-3, Pyrazoline 39455-90-8, Pyrazolone 67242-59-5,  
 N-Methyl-N-(2-pyridyl)formamide  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (**electrolyte** additive; secondary **lithium** batteries  
 using **lithium** nickel manganese oxide cathodes and containing  
 nitrogen-containing unsatd. heterocyclic additives in **electrolytes**  
 )

IT 108-47-4, 2,4-Dimethylpyridine 108-48-5,  
 2,6-Dimethylpyridine 372-47-4, 3-Fluoropyridine 372-48-5  
 , 2-Fluoropyridine 583-58-4, 3,4-Dimethylpyridine  
 583-61-9, 2,3-Dimethylpyridine 589-93-5,  
 2,5-Dimethylpyridine 591-22-0, 3,5-Dimethylpyridine  
 5453-67-8, Dimethyl-2,6-pyridine dicarboxylate 6269-24-5  
 , Methyl-3-pyridyl carbamate 67242-59-5, N-Methyl-N-(2-  
 pyridyl)formamide  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (**electrolyte** additive; secondary **lithium** batteries  
 using **lithium** nickel manganese oxide cathodes and containing

nitrogen-containing unsatd. heterocyclic additives in **electrolytes**

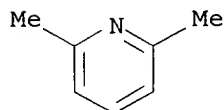
RN 108-47-4 HCAPLUS

CN Pyridine, 2,4-dimethyl- (9CI) (CA INDEX NAME)



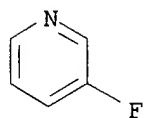
RN 108-48-5 HCAPLUS

CN Pyridine, 2,6-dimethyl- (9CI) (CA INDEX NAME)



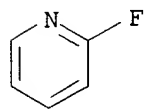
RN 372-47-4 HCAPLUS

CN Pyridine, 3-fluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



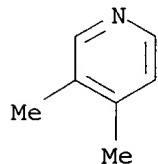
RN 372-48-5 HCAPLUS

CN Pyridine, 2-fluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



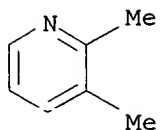
RN 583-58-4 HCAPLUS

CN Pyridine, 3,4-dimethyl- (9CI) (CA INDEX NAME)

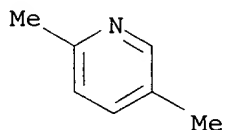


RN 583-61-9 HCAPLUS

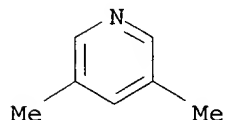
CN Pyridine, 2,3-dimethyl- (9CI) (CA INDEX NAME)



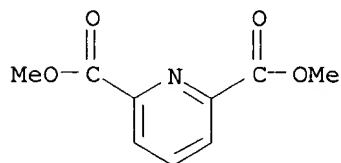
RN 589-93-5 HCAPLUS  
CN Pyridine, 2,5-dimethyl- (9CI) (CA INDEX NAME)



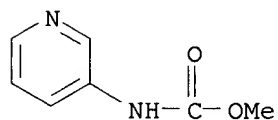
RN 591-22-0 HCAPLUS  
CN Pyridine, 3,5-dimethyl- (9CI) (CA INDEX NAME)



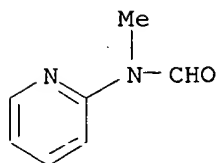
RN 5453-67-8 HCAPLUS  
CN 2,6-Pyridinedicarboxylic acid, dimethyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 6269-24-5 HCAPLUS  
CN Carbamic acid, 3-pyridinyl-, methyl ester (9CI) (CA INDEX NAME)



RN 67242-59-5 HCAPLUS  
CN Formamide, N-methyl-N-2-pyridinyl- (9CI) (CA INDEX NAME)



L26 ANSWER 4 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2003:167055 HCAPLUS

DN 138:207820

TI Electrolyte compositions and their use in electrochemical cells, photoelectrochemical cells, and secondary **nonaqueous** batteries

IN Yasuda, Takayasu; Wariishi, Koji

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 30 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM C08L083-06

ICS C08K005-00; C08L101-12; H01B001-06; H01M006-18; H01M010-40; H01M014-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38, 75

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003064259	A2	20030305	JP 2001-256050	20010827
PRAI	JP 2001-256050		20010827		

AB The compns. comprise polysiloxanes having repeating units Si(OR1)(OR2)O (R1, R2 = alkyl, alkyleneoxy) and liquid-crystalline ionic compds., e.g., compds.

having mesogen-containing anions and (in)organic cations. The photoelectrochem.

cells have charge-transporting layers containing the electrolyte compns., dye-sensitized semiconductor-containing photosensitive layers, and electrodes on conductive supports. The nonvolatile compns. have high durability, ion conductivity, and charge-transporting property and give the cells and the batteries with good cycle performance, photoelec. conversion, etc.

ST photoelectrochem cell electrolyte polysiloxane liq cryst ionic compd; battery electrolyte polysiloxane liq cryst ionic compd

IT Battery electrolytes  
Electrochemical cells  
Liquid crystals  
Liquid crystals, polymeric  
Photoelectrochemical cells

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds.

for (photo)electrochem. cells and secondary **nonaq.** batteries)

IT Polysiloxanes, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds.

for (photo)electrochem. cells and secondary **nonaq.** batteries)

IT Secondary batteries

(lithium; electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 500163-09-7P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 180027-63-8 189282-51-7 189282-53-9, Poly[oxy(diethoxysilylene)]  
444025-85-8, Poly[oxy(dimethoxysilylene)] 500163-11-1  
500163-14-4 500163-16-6 500163-18-8 500163-19-9  
500163-21-3 500163-22-4 500163-24-6 500163-26-8  
500163-30-4 500163-32-6 500163-33-7

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 85689-41-4P 139475-37-9P 202813-37-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

IT 108-59-8, Dimethyl malonate 112-29-8, 1-Bromodecane 638-45-9  
872-85-5, 4-Pyridinecarboxaldehyde

RL: RCT (Reactant); RACT (Reactant or reagent)

(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

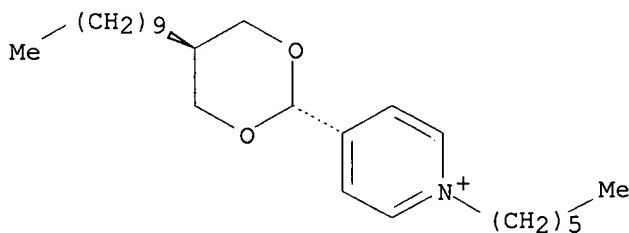
IT 500163-09-7P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(electrolyte compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary nonaq. batteries)

RN 500163-09-7 HCAPLUS

CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-hexyl-, iodide (9CI) (CA INDEX NAME)

Relative stereochemistry.



● I<sup>-</sup>

IT 500163-11-1 500163-14-4 500163-22-4

**500163-24-6**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(**electrolyte** compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary **nonaq** batteries)

RN 500163-11-1 HCAPLUS

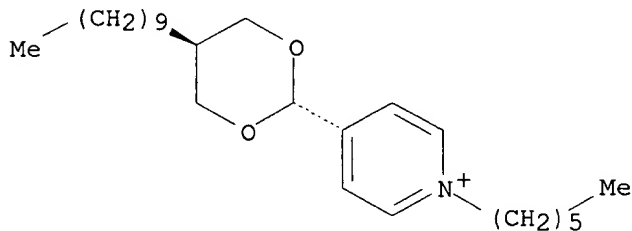
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-hexyl-, salt with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 500163-10-0

CMF C25 H44 N O2

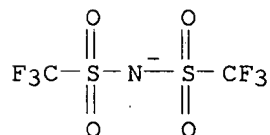
Relative stereochemistry.



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



RN 500163-14-4 HCAPLUS

CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-hexyl-, tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

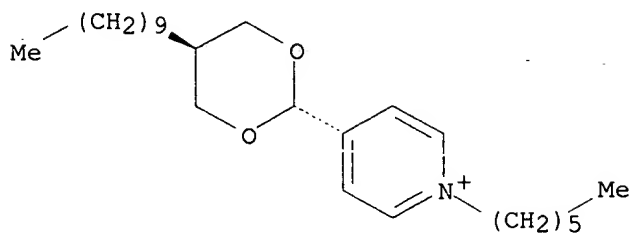
CM 1

CRN 500163-10-0

CMF C25 H44 N O2

Relative stereochemistry.



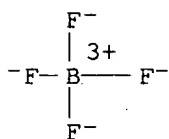


CM 2

CRN 14874-70-5

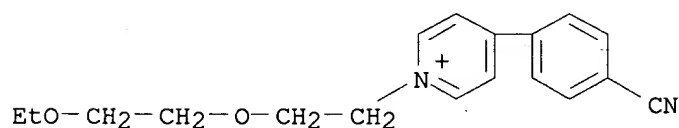
CMF B F4

CCI CCS



RN 500163-22-4 HCAPLUS

CN Pyridinium, 4-(4-cyanophenyl)-1-[2-(2-ethoxyethoxy)ethyl]-, iodide (9CI)  
(CA INDEX NAME)



RN 500163-24-6 HCAPLUS

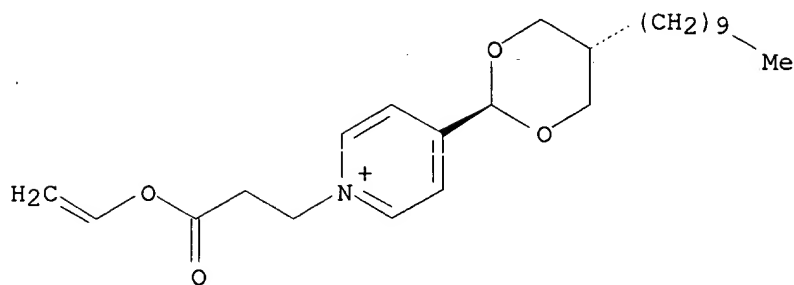
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-[3-(ethenyloxy)-3-oxopropyl]-, iodide, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 500163-23-5

CMF C24 H38 N O4 . I

Relative stereochemistry.



● I<sup>-</sup>

IT 202813-37-4P

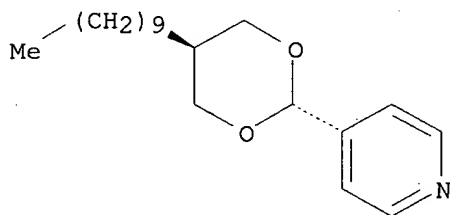
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(**electrolyte** compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary **nonaq** . batteries)

RN 202813-37-4 HCAPLUS

CN Pyridine, 4-(trans-5-decyl-1,3-dioxan-2-yl)- (9CI) (CA INDEX NAME)

Relative stereochemistry.



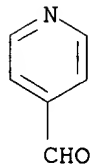
IT 872-85-5, 4-Pyridinecarboxaldehyde

RL: RCT (Reactant); RACT (Reactant or reagent)

(**electrolyte** compns. containing polysiloxanes and liquid-crystalline ionic compds. for (photo)electrochem. cells and secondary **nonaq** . batteries)

RN 872-85-5 HCAPLUS

CN 4-Pyridinecarboxaldehyde (9CI) (CA INDEX NAME)



L26 ANSWER 5 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
AN 2003:58416 HCAPLUS

KATHLEEN FULLER EIC 1700/PARKER LAW 308-4290

DN 138:124987  
 TI **Nonaqueous** electrolyte solution and secondary battery using the solution  
 IN Takehara, Masahiro; Fujii, Takashi; Kotato, Minoru; Noda, Daisuke; Kinoshita, Shinichi; Ue, Makoto; Suzuki, Hitoshi  
 PA Mitsubishi Chemical Corporation, Japan  
 SO PCT Int. Appl., 61 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58; H01M004-48  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003007416	A1	20030123	WO 2002-JP6906	20020708
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1317013	A1	20030604	EP 2002-745873	20020708
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, BG, CZ, EE				
	JP 2003092137	A2	20030328	JP 2002-200364	20020709
	US 2003165733	A1	20030904	US 2003-383555	20030310
PRAI	JP 2001-208992	A	20010710		
	JP 2001-214638	A	20010716		
	WO 2002-JP6906	W	20020708		
AB	The electrolyte solution has a <b>Li</b> salt dissolved in a lactone based <b>nonaq.</b> solvent mixture, where the solution contains $\leq 1$ mmol hydroxy carboxylic acid/kg. The electrolyte solution may also contain a N heterocyclic compound. The battery is a secondary <b>Li</b> battery.				
ST	secondary <b>lithium</b> battery electrolyte lactone solvent hydroxy carboxylic acid				
IT	Battery electrolytes ( <b>nonaq.</b> electrolyte solns. with low hydroxy carboxylic acid contents for secondary <b>lithium</b> batteries)				
IT	80-73-9, 1,3-Dimethyl-2-imidazolidinone 88-12-0, uses 91-22-5, Quinoline, uses 96-48-0, $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 96-54-8, 1-Methylpyrrole <b>109-06-8</b> , $\alpha$ -Picoline 110-86-1, Pyridine, uses 289-80-5, Pyridazine 289-96-3, 1,2,3-Triazine 623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate 872-50-4, 1-Methylpyrrolidone, uses 3741-38-6, Ethylene sulfite 4427-92-3, Phenyl ethylene carbonate 14283-07-9, <b>Lithium</b> fluoroborate 19836-78-3 21324-40-3, <b>Lithium</b> hexafluorophosphate <b>38222-83-2</b> , 2,6-Di-tert-butyl-4-methylpyridine				
	RL: DEV (Device component use); USES (Uses) ( <b>nonaq.</b> electrolyte solns. with low hydroxy carboxylic acid contents for secondary <b>lithium</b> batteries)				
IT	591-81-1, $\gamma$ -Hydroxybutyric acid 122525-99-9, Zonyl fso-100				

RL: MSC (Miscellaneous)

(**nonaq.** electrolyte solns. with low hydroxy carboxylic acid contents for secondary **lithium** batteries)

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

- (1) Denso Corp; JP 10-50344 A 1998 HCAPLUS
- (2) Fujitsu Ltd; JP 09-106833 A 1997 HCAPLUS
- (3) Fujitsu Ltd; JP 09-204932 A 1998 HCAPLUS
- (4) Fujitsu Ltd; US 5731106 A 1998 HCAPLUS
- (5) Hitachi Maxell Ltd; JP 62-217578 A 1987 HCAPLUS
- (6) Japan Storage Battery Co Ltd; JP 200160464 A 2001
- (7) Matsushita Electric Industrial Co Ltd; JP 07-283083 A 1995 HCAPLUS
- (8) Matsushita Electric Industrial Co Ltd; JP 08-321438 A 1996 HCAPLUS
- (9) Matsushita Electric Industrial Co Ltd; JP 08-321440 A 1996 HCAPLUS
- (10) Mitsubishi Chemical Corp; JP 2001126762 A 2001 HCAPLUS
- (11) Sanyo Electric Co Ltd; JP 07-105977 A 1995 HCAPLUS
- (12) Sony Corp; JP 05-315006 A 1993 HCAPLUS
- (13) Sony Corp; JP 07-211351 A 1995 HCAPLUS
- (14) Tonen Corp; JP 11-185810 A 1999 HCAPLUS
- (15) Toshiba Corp; JP 2000235868 A 2000 HCAPLUS
- (16) Ube Industries Ltd; JP 10-270075 A 1998 HCAPLUS
- (17) Ube Industries Ltd; JP 10-270074 A 2000 HCAPLUS
- (18) Ube Industries Ltd; US 6045945 A 2000 HCAPLUS
- (19) Ube Industries Ltd; JP 200152741 A 2001

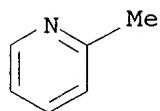
IT 109-06-8,  $\alpha$ -Picoline 38222-83-2,  
2,6-Di-tert-butyl-4-methylpyridine

RL: DEV (Device component use); USES (Uses)

(**nonaq.** electrolyte solns. with low hydroxy carboxylic acid contents for secondary **lithium** batteries)

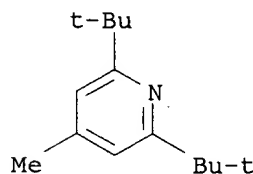
RN 109-06-8 HCAPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



RN 38222-83-2 HCAPLUS

CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 6 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2002:945140 HCAPLUS

DN 138:26910

TI Secondary **nonaqueous** electrolyte battery and the  
**nonaqueous** electrolyte solution

IN Takehara, Masahiro; Fujii, Takashi; Kinoshita, Shinichi; Ue, Makoto

PA Mitsubishi Chemical Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M004-02; H01M004-59

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002359002	A2	20021213	JP 2001-162306	20010530
PRAI	JP 2001-162306		20010530		

AB The battery is a **Li** battery, and the electrolyte solution uses a lactone based **nonaq.** solvent mixture containing 0.1-10% aromatic N-containing heterocyclic compound

ST secondary **lithium** battery electrolyte solvent compn; lactone nitrogen heterocyclic compd battery electrolyte solvent

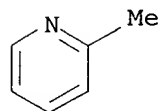
IT Battery electrolytes  
(**nonaq.** solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary **lithium** battery electrolyte solns.)

IT 91-22-5, Quinoline, uses 96-48-0,  $\gamma$ -Butyrolactone 96-54-8, 1-Methylpyrrole **109-06-8**,  $\alpha$ -Picoline 289-80-5, Pyridazine 289-96-3, 1,2,3-Triazine 872-36-6, Vinylene carbonate 14283-07-9, **Lithium** fluoroborate **38222-83-2**, 2,6-Di-tert-butyl-4-methylpyridine  
RL: DEV (Device component use); USES (Uses)  
(**nonaq.** solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary **lithium** battery **electrolyte** solns.)

IT **109-06-8**,  $\alpha$ -Picoline **38222-83-2**, 2,6-Di-tert-butyl-4-methylpyridine  
RL: DEV (Device component use); USES (Uses)  
(**nonaq.** solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary **lithium** battery **electrolyte** solns.)

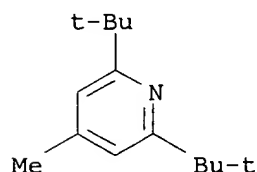
RN 109-06-8 HCAPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



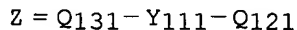
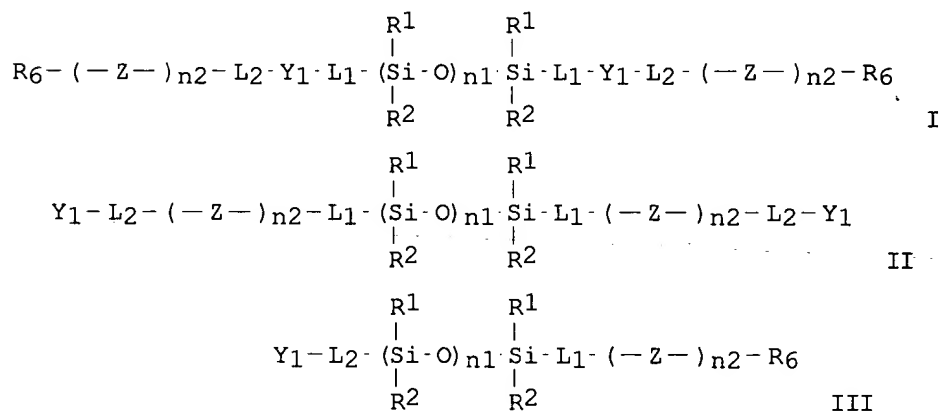
RN 38222-83-2 HCAPLUS

CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 7 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2002:673113 HCAPLUS  
 DN 137:219505  
 TI Electrolyte composition, battery, photoelectrochemical cell, secondary **nonaqueous** electrolyte battery, and liquid crystal compounds  
 IN Ono, Michio; Yasuda, Takayasu; Wariishi, Koji  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 32 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01B001-06  
 ICS C08L083-04; H01M010-40; H01M014-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002251916	A2	20020906	JP 2001-47041	20010222
PRAI	JP 2001-47041		20010222		
OS	MARPAT 137:219505				
GI					



AB The electrolyte contains a liquid crystal compound having cation and/or anion containing repeating units  $-(\text{SiR1R2-O})_{n1}$ , where R1 and R2 = (substituted) alkyl groups,  $n1 \geq 3$ . The liquid crystal compound is I, II, or III, where the R6 = H or a substituent group, Y111= bivalent (4-7)- membered ring, Q121 and Q131 = bivalent junction group or single bond,  $n2 = 1, 2$ , or 3, ( $n = 2$  or 3 the  $\geq 1$  of Y111, Q121, or Q131 in the compound can be different from each other), and X1 is the counter ion for Y1. Batteries, secondary **nonaq.** batteries, and photoelectrochem. cells use the electrolyte.

ST secondary battery electrolyte liq crystal compd; photoelectrochem cell electrolyte liq crystal compd

IT Battery electrolytes

Liquid crystals

Photoelectrochemical cells

(compns. of electrolytes containing liquid crystal compds. for secondary lithium batteries and photoelectrochem. cells)

IT 311-28-4, Tetrabutylammonium iodide 14283-07-9, Lithium  
fluoroborate 65039-05-6 90076-65-6 **455934-78-8**  
**455934-80-2** 455934-81-3 455934-83-5 455934-84-6  
455934-85-7 455934-87-9 455934-88-0 455934-89-i 455934-90-4  
455934-91-5 455934-93-7 455934-95-9 455934-97-1 **455951-19-6**  
**455951-26-5**

RL: DEV (Device component use); USES (Uses)

(compns. of **electrolytes** containing liquid crystal compds. for secondary lithium batteries and photoelectrochem. cells)

IT **455934-78-8** **455934-80-2** **455951-19-6**  
**455951-26-5**

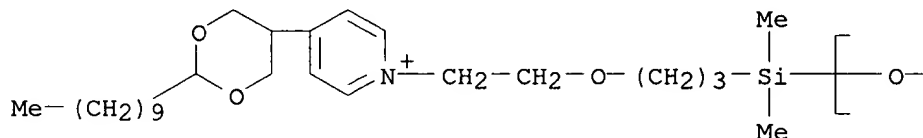
RL: DEV (Device component use); USES (Uses)

(compns. of **electrolytes** containing liquid crystal compds. for secondary lithium batteries and photoelectrochem. cells)

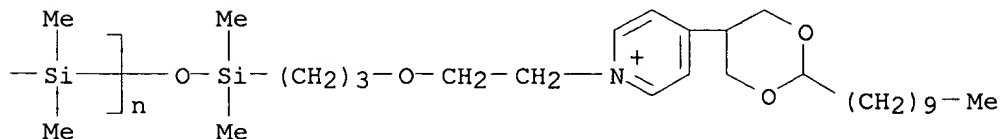
RN 455934-78-8 HCAPLUS

CN Poly[oxy(dimethylsilylene)],  $\alpha$ -[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]- $\omega$ -[[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]oxy]-, diiodide (9CI) (CA INDEX NAME)

PAGE 1-A

● 2 I<sup>-</sup>

PAGE 1-B



RN 455934-80-2 HCAPLUS

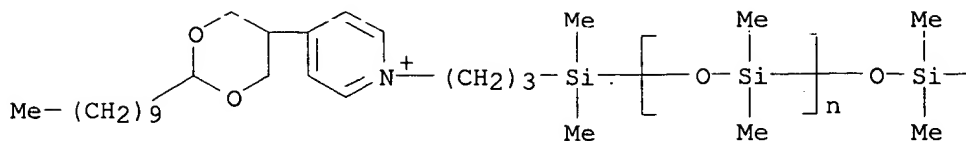
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, ion(1-),  $\alpha$ -[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]- $\omega$ -[[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

CM 1

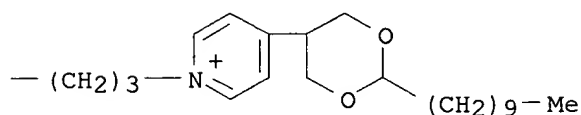
CRN 455934-79-9

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CMF  (C2 H6 O Si)n C48 H86 N2 O5 Si2
CCI  PMS
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PAGE 1-A

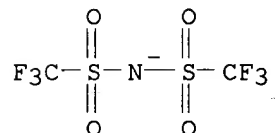


PAGE 1-B



CM 2

CRN 98837-98-0  
CMF C2 F6 N O4 S2



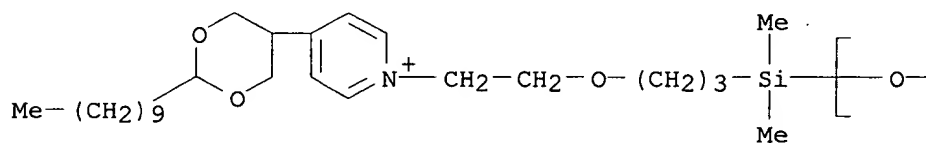
RN 455951-19-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, ion(1-),  $\alpha$ -[[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]- $\omega$ -[[[3-[2-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]ethoxy]propyl]dimethylsilyl]oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME).

CM 1

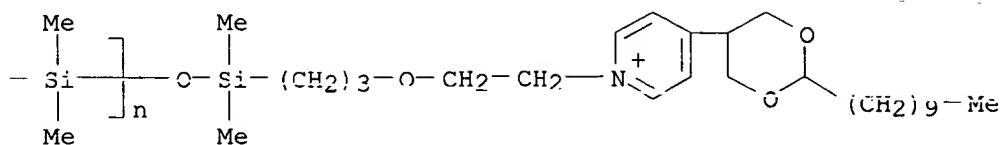
CRN 455951-18-5  
CMF (C2 H6 O Si)n C52 H94 N2 O7 Si2  
CCI PMS

PAGE 1-A





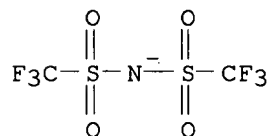
PAGE 1-B



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2



RN 455951-26-5 HCAPLUS

CN Poly[oxy(dimethylsilylene)],  $\alpha$ -[[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]- $\omega$ -[[[3-[4-(trans-2-decyl-1,3-dioxan-5-yl)pyridinio]propyl]dimethylsilyl]oxy]-, bis[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

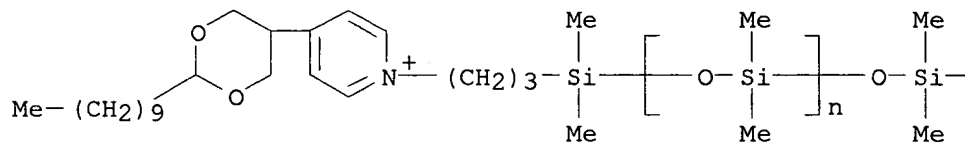
CM 1

CRN 455934-79-9

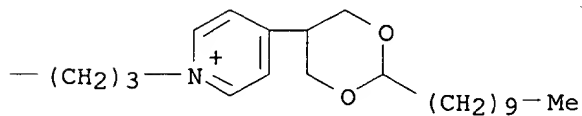
CMF (C2 H6 O Si)<sub>n</sub> C48 H86 N2 O5 Si2

CCI PMS

PAGE 1-A

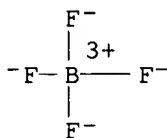


PAGE 1-B



CM 2

CRN 14874-70-5  
 CMF B F4  
 CCI CCS



L26 ANSWER 8 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2002:656355 HCAPLUS

DN 137:203955

TI Electrolyte composition, battery, photoelectrochemical cell, and secondary **nonaqueous** electrolyte battery

IN Ono, Michio

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M014-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002246066	A2	20020830	JP 2001-38118	20010215
PRAI	JP 2001-38118		20010215		

AB The electrolyte contains a polyoxyalkylene, having liquid crystalline cationic or

anionic side chain or liquid crystalline counter ions. The polyoxyalkylene is  $-(\text{CH}_2\text{-CHA-O})\text{-}_y\text{H}$  (A = cationic or anionic group, y = counter ion) and optionally  $-(\text{CH}_2\text{-CHR-O})\text{-}$  [R = H, (substituted) alkyl, or (substituted) aryl group]. Batteries, secondary **nonaq.** batteries, and photoelectrochem. cells use the electrolyte.

ST polyoxyalkylene liq cryst side chain counter ion electrolyte; battery electrolyte liq cryst polyoxyalkylene; photoelectrochem cell electrolyte liq cryst polyoxyalkylene

IT Battery electrolytes

Photoelectrochemical cells

(polyoxyalkylene with liquid crystalline ionic side chains or counter ions

for

electrolytes in batteries and photoelectrochem. cells)

IT 14283-07-9, **Lithium** fluoroborate 33454-82-9, **Lithium** trifluoromethanesulfonate 452977-20-7 452977-22-9

452977-23-0 452977-25-2 452977-27-4

452977-29-6 452977-32-1 452977-34-3 452977-37-6 452977-39-8

452977-42-3 452977-44-5 452977-47-8 452977-49-0 452977-52-5

452977-56-9

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(polyoxyalkylene with liquid crystalline ionic side chains or counter ions

for

**electrolytes** in batteries and photoelectrochem. cells)

IT 452977-20-7 452977-22-9 452977-23-0  
452977-25-2 452977-27-4

RL: DEV (Device component use); PRP (Properties); USES (Uses)

(polyoxyalkylene with liquid crystalline ionic side chains or counter ions  
for **electrolytes** in batteries and photoelectrochem. cells)

RN 452977-20-7 HCAPLUS

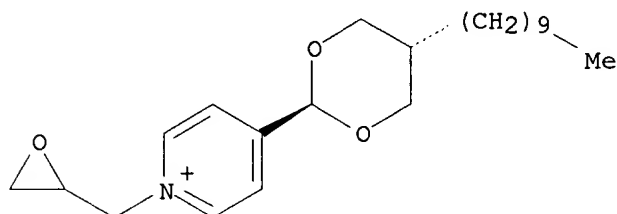
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, iodide,  
homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 452977-19-4

CMF C22 H36 N O3 . I

Relative stereochemistry.



● I<sup>-</sup>

RN 452977-22-9 HCAPLUS

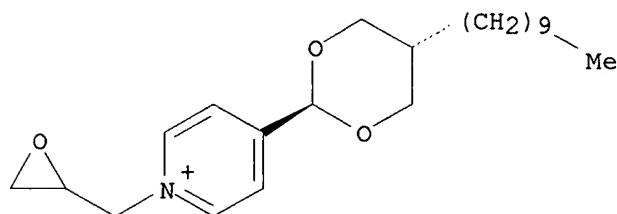
CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, salt  
with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide  
(1:1), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 452977-21-8

CMF C22 H36 N O3

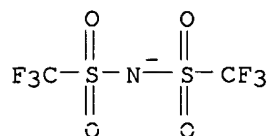
Relative stereochemistry.



CM 2

CRN 98837-98-0

CMF C2 F6 N O4 S2

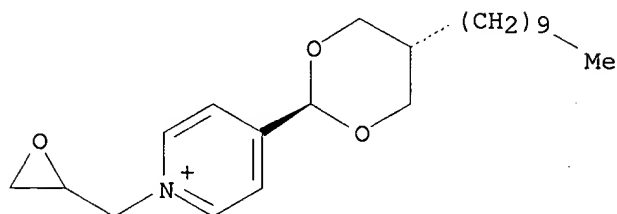


RN 452977-23-0 HCAPLUS  
 CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, iodide,  
 polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 452977-19-4  
 CMF C22 H36 N O3 . I

Relative stereochemistry.



CM 2

CRN 75-21-8  
 CMF C2 H4 O



RN 452977-25-2 HCAPLUS  
 CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, salt  
 with 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide  
 (1:1), polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-21-8  
 CMF C2 H4 O



CM 2

CRN 452977-24-1

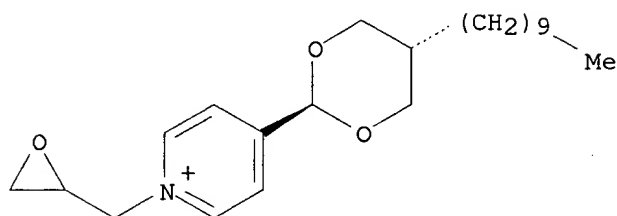
CMF C22 H36 N O3 . C2 F6 N O4 S2

CM 3

CRN 452977-21-8

CMF C22 H36 N O3

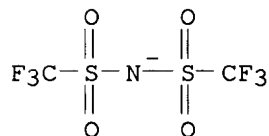
Relative stereochemistry.



CM 4

CRN 98837-98-0

CMF C2 F6 N O4 S2



RN 452977-27-4 HCAPLUS

CN Pyridinium, 4-(trans-5-decyl-1,3-dioxan-2-yl)-1-(oxiranylmethyl)-, tetrafluoroborate(1-), polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-21-8

CMF C2 H4 O



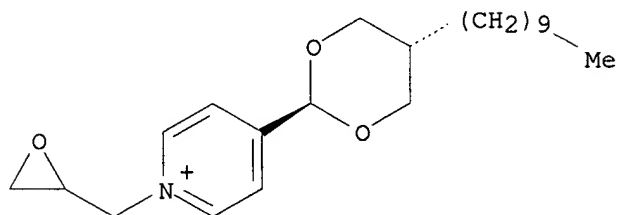
CM 2

CRN 452977-26-3  
CMF C22 H36 N O3 . B F4

CM 3

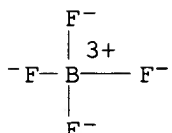
CRN 452977-21-8  
CMF C22 H36 N O3

Relative stereochemistry.



CM 4

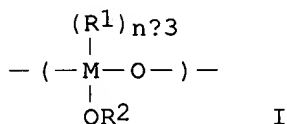
CRN 14874-70-5  
CMF B F4  
CCI CCS



L26 ANSWER 9 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
AN 2002:656112 HCAPLUS  
DN 137:203950  
TI Method for preparation of electrolyte composition for **nonaqueous**  
electrolyte secondary battery  
IN Wariishi, Koji; Yasuda, Takayasu; Senga, Takeshi  
PA Fuji Photo Film Co., Ltd., Japan  
SO Eur. Pat. Appl., 65 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
IC ICM H01M010-36  
ICS H01M010-40; C08L083-00; C08G077-00  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 35, 38  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1235294	A2	20020828	EP 2002-3925	20020221
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

	JP 2002252030	A2	20020906	JP 2001-46723	20010222
	JP 2002298918	A2	20021011	JP 2001-97417	20010329
	US 2002155354	A1	20021024	US 2002-80067	20020222
PRAI	JP 2001-46723	A	20010222		
	JP 2001-97417	A	20010329		
OS	MARPAT 137:203950				
GI					



AB An electrolyte composition that contains a molten salt, having a specific structure (I), a silicon polymer, and a salt of a metal ion of Group 1 or 2 of the Periodic Table; and a **nonaq.** electrolyte secondary cell containing the electrolyte composition are disclosed. Also disclosed are an electrolyte composition that contains a polymer compound having repetitive units of a structure of the formula I, and a salt of a metal ion of Group 1 or 2 of the Periodic Table; a method for producing the electrolyte composition; and a **nonaq.** electrolyte secondary cell containing the electrolyte composition

ST battery **nonaq** electrolyte siloxane polymer

IT Battery electrolytes  
Ionic conductivity  
Secondary batteries  
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)

IT Silicates, preparation  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)

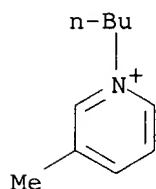
IT 143314-16-3 174899-82-2 324574-91-6 **344790-86-9**  
RL: DEV (Device component use); USES (Uses)  
(method for preparation of **electrolyte** composition for **nonaq.** **electrolyte** secondary battery)

IT 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 90076-65-6, **Lithium** triflimide  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)

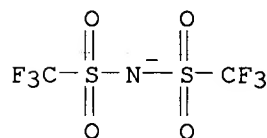
IT 450358-41-5P 450358-41-5P  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)  
(method for preparation of electrolyte composition for **nonaq.** electrolyte secondary battery)

IT 450358-42-6P 450358-42-6P 450358-43-7P 450358-43-7P 450358-44-8P 450358-44-8P 450358-45-9P 450358-45-9P 450358-46-0P 450358-46-0P  
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(method for preparation of electrolyte composition for **nonaq.**

electrolyte secondary battery)  
 IT **344790-86-9**  
 RL: DEV (Device component use); USES (Uses)  
 (method for preparation of **electrolyte** composition for **nonaq.**  
**electrolyte** secondary battery)  
 RN 344790-86-9 HCAPLUS  
 CN Pyridinium, 1-butyl-3-methyl-, salt with 1,1,1-trifluoro-N-  
 [(trifluoromethyl)sulfonyl]methanesulfonamide (1:1) (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 125867-77-8  
 CMF C10 H16 N



CM 2  
 CRN 98837-98-0  
 CMF C2 F6 N O4 S2

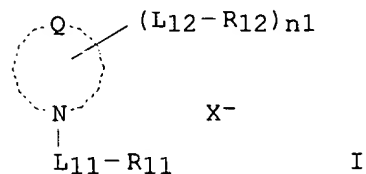


L26 ANSWER 10 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2002:553509 HCAPLUS  
 DN 137:127526  
 TI Electrolyte composition with high ion conductivity and high ion transport  
 number and **nonaqueous** electrolyte secondary batteries  
 IN Wariishi, Koji; Sen, Masakazu; Ono, Michio  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 24 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M010-40; C09K003-16; H01B001-06  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38, 76  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002208433	A2	20020726	JP 2001-325587	20011023



PRAI JP 2000-323202 A 20001023  
 OS MARPAT 137:127526  
 GI



- AB The compns. contain (A)  $\geq 1$  compds. selected from I, R21L21A+(L22R22) (L23R23) (L24R24) X<sup>-</sup> and R31L31N+(L32R32):C[N(L33R33) (L34R34)] [N(L35R35) (L36R36)] X<sup>-</sup> (Q = group for forming 5- or 6-membered aromatic cation; L11-12, L21-24, L31-36 = (un)substituted alkylene(oxy) and/or alkenylene(oxy); R11-12, R21-24, R31-36 = H, OM(OR)<sub>n</sub>, may form ring;  $\geq 1$  of R11-12, R21-24, R31-36 = OM(OR)<sub>n</sub>; R = (un)substituted alkyl or aryl; M = Si, B, Ti, Al, Ge, Sn; n1 = 0, natural number; X<sup>-</sup> = anion) and (B) salts of Group IA or IIA ions. Preferable Markush structures for I are further specified. Also claimed are solid electrolyte compns. containing crosslinked compds. of component A, obtained by reaction of A with compds. having  $\geq 2$  nucleophilic groups in a mol., instead of component A. **nonaq.** electrolyte secondary batteries with the said electrolyte compns. are also claimed. Batteries with high capacity and excellent cycle characteristics are obtained.
- ST **nonaq** electrolyte compn secondary battery; imidazolinium salt  
**nonaq** electrolyte secondary battery; quaternary ammonium  
**nonaq** electrolyte secondary battery; polyoxyalkylene ionene polymer solid electrolyte battery
- IT Battery electrolytes  
 Polymer electrolytes  
 Solid state secondary batteries  
 (ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for **nonaq.** secondary batteries)
- IT Polyoxyalkylenes, uses  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (ionene-, **lithium** complex; ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for **nonaq.** secondary batteries)
- IT Secondary batteries  
 (**nonaq.** electrolyte; ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for **nonaq.** secondary batteries)
- IT Ionene polymers  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (polyoxyalkylene-, **lithium** complex; ammonium compound-Li salt mixts. or their crosslinked solids as electrolytes for **nonaq.** secondary batteries)
- IT 7439-93-2DP, **Lithium**, polyoxyalkylene-ionene polymer complexes  
 444045-88-9P 444045-89-0P 444045-91-4P 444046-10-0DP,  
**lithium** complex 444046-11-1DP, **lithium** complex  
 444046-12-2DP, **lithium** complex 444046-14-4DP, **lithium**  
 complex 444046-15-5DP, **lithium** complex 444046-16-6DP,

**lithium complex 444046-17-7DP, lithium complex**  
**444046-18-8DP, lithium complex 444046-19-9DP, lithium**  
**complex 444046-20-2DP, lithium complex 444046-21-3DP,**  
**lithium complex**

RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT 90076-65-6

RL: DEV (Device component use); RCT (Reactant); TEM (Technical or  
 engineered material use); RACT (Reactant or reagent); USES (Uses)  
 (ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT 444045-96-9 444045-97-0 444045-98-1 444045-99-2 444046-01-9  
 444046-02-0 **444046-03-1** 444046-04-2 444046-05-3  
 444046-07-5 444046-09-7

RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)

(ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT 444045-79-8P 444045-80-1P 444045-81-2P 444045-82-3P 444045-83-4P  
 444045-84-5P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)

(ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT 444045-86-7P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
 use); PREP (Preparation); USES (Uses)

(ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT 74-88-4, Methyl iodide, reactions 105-59-9, N-Methyldiethanolamine  
 624-76-0, Iodoethanol 998-30-1, Triethoxysilane 1615-14-1,  
 1H-Imidazole-1-ethanol 7783-93-9, Silver perchlorate 13439-84-4,  
 Pentamethylguanidine 14104-20-2, Silver tetrafluoroborate

RL: RCT (Reactant); RACT (Reactant or reagent)

(ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium**  
 tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate  
**444045-93-6** 444045-95-8

RL: TEM (Technical or engineered material use); USES (Uses)

(ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

IT **444046-17-7DP, lithium complex**

RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)

(ammonium compound-Li salt mixts. or their crosslinked solids  
 as **electrolytes** for **nonaq.** secondary batteries)

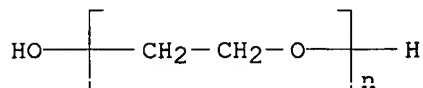
RN 444046-17-7 HCAPLUS

CN Pyridinium, 1,4-bis[2-[(triethoxysilyl)oxy]ethyl]-, salt with  
 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1),  
 polymer with  $\alpha$ -hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl) (9CI)  
 (CA INDEX NAME)

CM 1

CRN 25322-68-3

CMF (C2 H4 O)<sub>n</sub> H2 O  
CCI PMS

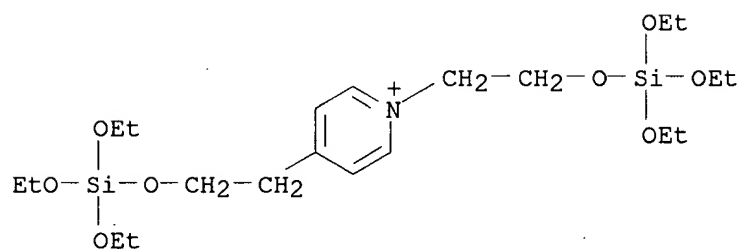


CM 2

CRN 444046-03-1  
CMF C21 H42 N O8 Si2 . C2 F6 N O4 S2

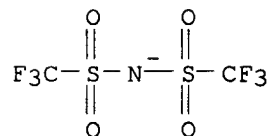
CM 3

CRN 444045-92-5  
CMF C21 H42 N O8 Si2



CM 4

CRN 98837-98-0  
CMF C2 F6 N O4 S2



IT 444046-03-1

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

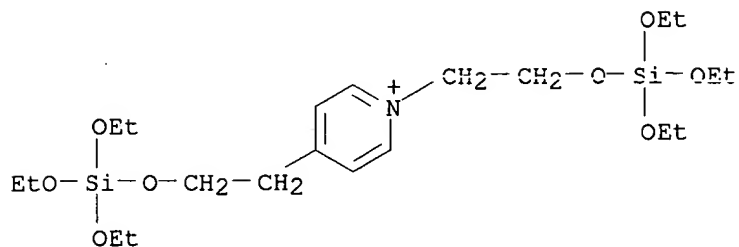
(ammonium compound-Li salt mixts. or their crosslinked solids  
as **electrolytes** for **nonaq.** secondary batteries)

RN 444046-03-1 HCAPLUS

CN Pyridinium, 1,4-bis[2-[(triethoxysilyl)oxy]ethyl]-, salt with  
1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]methanesulfonamide (1:1)  
(9CI) (CA INDEX NAME)

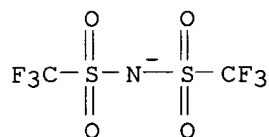
CM 1

CRN 444045-92-5  
CMF C21 H42 N O8 Si2



CM 2

CRN 98837-98-0  
CMF C2 F6 N O4 S2



IT 444045-93-6

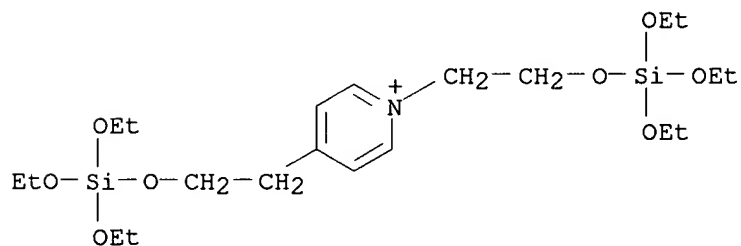
RL: TEM (Technical or engineered material use); USES (Uses)  
(ammonium compound-Li salt mixts. or their crosslinked solids  
as **electrolytes** for **nonaq.** secondary batteries)

RN 444045-93-6 HCAPLUS

CN Pyridinium, 1,4-bis[2-[(triethoxysilyl)oxy]ethyl]-, hexafluorophosphate(1-)  
(9CI) (CA INDEX NAME)

CM 1

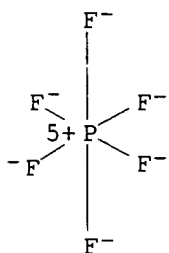
CRN 444045-92-5  
CMF C21 H42 N O8 Si2



CM 2

CRN 16919-18-9

CMF F6 P  
CCI CCS



L26 ANSWER 11 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
AN 2002:552264 HCAPLUS  
DN 137:127520  
TI Crosslinked ionomer-gelled **nonaqueous** polymer electrolytes with  
high ionic conductivity for rechargeable **lithium** polymer  
batteries  
IN Park, Chi-Kyun; Zhang, Zhiwei; Sun, Lu Ying; Chai, Chul  
PA SKC Co., Ltd., S. Korea  
SO Eur. Pat. Appl., 13 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
IC ICM H01M006-18  
ICS H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1225649	A2	20020724	EP 2001-310592	20011219
	EP 1225649	A3	20020807		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	US 2002136958	A1	20020926	US 2001-760720	20010117
	US 2002136959	A1	20020926	US 2001-986459	20011108
PRAI	US 2001-760720	A	20010117		
	US 2001-986459	A	20011108		

AB Ionomer-type gelled polymer electrolytes for rechargeable  
polymer-electrode batteries are formed by dissolving a gelling agent into  
organic-liquid electrolytes, pouring the gelling agent (with the organic liquid  
electrolyte) into the battery case, and gelling the mixture in-situ within  
the battery case at elevated temperature. The gel polymer electrolytes exhibit  
excellent ionic conductivity of up to 10<sup>-2</sup> S/cm and have a stable voltage  
suitable for **lithium** rechargeable batteries containing  
**lithium** salt-based organic-liquid electrolytes. The gelled polymer  
electrolyte is the reaction product of (1) an amine-group-containing compound  
(e.g., polymers copolymers, or amines), and (2) a halide-group or  
epoxy-group-containing compound (e.g., an alkylene halide, a halomethyl group,  
or an epoxy monomer). Preferred compds. for component (1) include  
pyridines and vinylpyridines, such as 2-vinylpyridine copolymers;  
preferred compds. for component (2) include bis(bromomethyl)benzenes,  
 $\alpha,\alpha'$ -dibromoxylenes, diiodialkanes, (3,4-

- epoxycyclohexyl)methyl-3',4'-epoxycyclohexanecarboxylate, butadiene diepoxide, and butanediol diglycidyl ether.
- ST gelled polymer electrolyte rechargeable **lithium** battery;  
pyridinium ionomer epoxy resin gelation electrolyte rechargeable battery;  
vinylpyridine ionomer epoxy resin gelation battery electrolyte;  
iodopropane vinylpyridine ionomer gelation battery electrolyte
- IT Epoxy resins, uses  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(ionomers, battery electrolytes containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT Gelation agents  
(ionomers; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT Battery electrolytes  
(**nonaq.**; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT Carbon black, uses  
Fluoropolymers, uses  
RL: DEV (Device component use); USES (Uses)  
(polymer electrode containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT Ionomers  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(pyridinium-epoxy and pyridinium-iodoxylylene copolymers, battery electrolytes containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT **443890-84-4P 443890-85-5P 443890-86-6P 443890-87-7P**  
RL: DEV (Device component use); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(gelling agent; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium** tetrafluoroborate 18424-17-4, **Lithium** hexafluoroantimonate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** trifluoromethanesulfonate 90076-65-6, **Lithium** bis(trifluoromethanesulfonyl)imide  
RL: DEV (Device component use); USES (Uses)  
(**nonaq.** electrolyte containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT 12190-79-3, Cobalt **lithium** oxide (CoLiO<sub>2</sub>) 24937-79-9, Polyvinylidene difluoride  
RL: DEV (Device component use); USES (Uses)  
(polymer electrode containing; crosslinked ionomer-gelled **nonaq.** polymer electrolytes with high ionic conductivity for rechargeable **lithium** polymer batteries)
- IT **443890-84-4P 443890-85-5P 443890-86-6P**

**443890-87-7P**

RL: DEV (Device component use); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(gelling agent; crosslinked ionomer-gelled **nonaq.** polymer **electrolytes** with high ionic conductivity for rechargeable **lithium** polymer batteries)

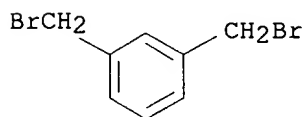
RN 443890-84-4 HCAPLUS

CN Pyridine, 2-ethenyl-, polymer with 1,3-bis(bromomethyl)benzene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 626-15-3

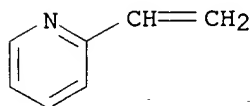
CMF C8 H8 Br2



CM 2

CRN 100-69-6

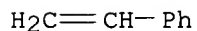
CMF C7 H7 N



CM 3

CRN 100-42-5

CMF C8 H8



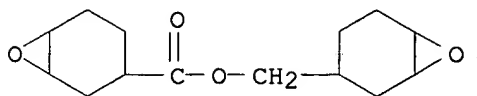
RN 443890-85-5 HCAPLUS

CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 7-oxabicyclo[4.1.0]hept-3-ylmethyl ester, polymer with 1,3-bis(bromomethyl)benzene, ethenylbenzene and 2-ethenylpyridine (9CI) (CA INDEX NAME)

CM 1

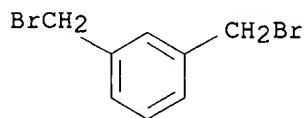
CRN 2386-87-0

CMF C14 H20 O4



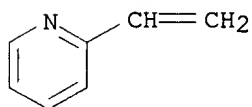
CM 2

CRN 626-15-3  
CMF C8 H8 Br2



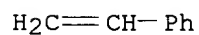
CM 3

CRN 100-69-6  
CMF C7 H7 N



CM 4

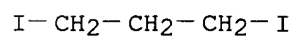
CRN 100-42-5  
CMF C8 H8



RN 443890-86-6 HCAPLUS  
CN Pyridine, 2-ethenyl-, polymer with 1,3-diiodopropane and ethenylbenzene  
(9CI) (CA INDEX NAME)

CM 1

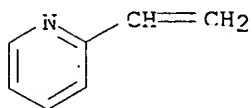
CRN 627-31-6  
CMF C3 H6 I2



CM 2



CRN 100-69-6  
CMF C7 H7 N



CM 3

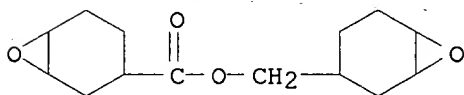
CRN 100-42-5  
CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

RN 443890-87-7 HCAPLUS  
CN 7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 7-oxabicyclo[4.1.0]hept-3-ylmethyl ester, polymer with ethenylbenzene and 2-ethenylpyridine (9CI)  
(CA INDEX NAME)

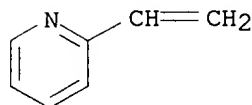
CM 1

CRN 2386-87-0  
CMF C14 H20 O4



CM 2

CRN 100-69-6  
CMF C7 H7 N



CM 3

CRN 100-42-5  
CMF C8 H8

$$\text{H}_2\text{C}=\text{CH}-\text{Ph}$$

L26 ANSWER 12 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2002:354009 HCAPLUS  
 DN 136:372231  
 TI Electrolyte composition for **nonaqueous** secondary battery and solar photoelectrochemical cell  
 IN Ono, Michio; Wariishi, Koji; Yasuda, Takayasu; Qian, Chang-yi  
 PA Japan  
 SO U.S. Pat. Appl. Publ., 41 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 IC ICM H01M010-40  
 NCL 429324000  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 74

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002055046	A1	20020509	US 2001-933716	20010822
	US 6627099	B2	20030930		
	JP 2002170426	A2	20020614	JP 2001-248879	20010820
PRAI	JP 2000-250828	A	20000822		
	JP 2001-248879	A	20010820		
AB	An electrolyte composition which is excellent in durability and charge transport performance, and an electrochem. battery in which deterioration of the charge transport performance with time is minimized are disclosed. The electrolyte composition includes therein a salt which comprises an anion which contains a mesogen group, and an alkyl or alkenyl group having 6 carbons or more in the structure of the anion, and an organic or inorg. cation.				
ST	solar photoelectrochem <b>nonaq</b> electrolyte; battery secondary <b>nonaq</b> electrolyte				
IT	Battery electrolytes Electrolytes Mesophase pitch Photoelectrochemical cells (electrolyte composition for <b>nonaq.</b> secondary battery and solar photoelectrochem. cell)				
IT	Carbonaceous materials (technological products) RL: DEV (Device component use); USES (Uses) (electrolyte composition for <b>nonaq.</b> secondary battery and solar photoelectrochem. cell)				
IT	Secondary batteries ( <b>lithium</b> ; electrolyte composition for <b>nonaq.</b> secondary battery and solar photoelectrochem. cell)				
IT	26570-48-9, Viscoat 335 RL: RCT (Reactant); RACT (Reactant or reagent) (crosslinking agent; electrolyte composition for <b>nonaq.</b> secondary battery and solar photoelectrochem. cell)				
IT	9002-93-1, Triton x 100 RL: TEM (Technical or engineered material use); USES (Uses) (dispersion agent; electrolyte composition for <b>nonaq.</b> secondary battery and solar photoelectrochem. cell)				
IT	311-28-4, Tetrabutylammonium iodide 1656-48-0 7553-56-2, Iodine, uses				

12190-79-3, Cobalt **lithium** oxide colio2 13463-67-7, Titania,  
 uses 174899-82-2 174899-83-3 307558-17-4 422555-55-3 422555-57-5  
 422555-59-7 422555-61-1 422555-63-3 422555-65-5 422555-67-7  
 422555-71-3 422555-73-5 **422555-74-6** 422555-76-8  
 422555-79-1 422555-80-4 422555-81-5 422555-82-6 422555-84-8  
 422555-85-9 422555-87-1 422555-88-2 422555-89-3 422555-91-7  
 422555-92-8 422555-93-9 423170-85-8 423171-91-9 423171-92-0  
 423171-95-3 423178-21-6

RL: DEV (Device component use); USES (Uses)

(**electrolyte** composition for **nonaq.** secondary battery  
 and solar photoelectrochem. cell)

IT 141460-19-7

RL: DEV (Device component use); MOA (Modifier or additive use); USES  
 (Uses)

(electrolyte composition for **nonaq.** secondary battery and solar  
 photoelectrochem. cell)

IT 75-05-8, Acetonitrile, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(electrolyte composition for **nonaq.** secondary battery and solar  
 photoelectrochem. cell)

IT 2589-57-3, Dimethyl 2,2'-azodiisobutyrate

RL: RCT (Reactant); RACT (Reactant or reagent)

(heat polymerization initiator; electrolyte composition for **nonaq.**  
 secondary battery and solar photoelectrochem. cell)

IT 71868-10-5, Irgacure 907

RL: RCT (Reactant); RACT (Reactant or reagent)

(light polymerization initiator; electrolyte composition for **nonaq.**  
 secondary battery and solar photoelectrochem. cell)

IT 100752-97-4, Diethylthioxanthone

RL: TEM (Technical or engineered material use); USES (Uses)

(sensitizer; electrolyte composition for **nonaq.** secondary battery  
 and solar photoelectrochem. cell)

IT **422555-74-6**

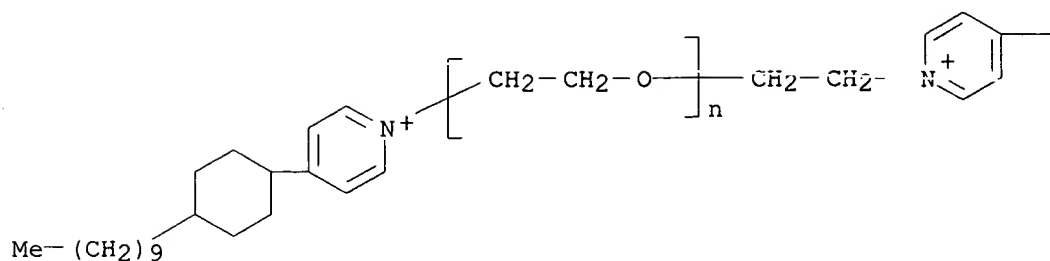
RL: DEV (Device component use); USES (Uses)

(**electrolyte** composition for **nonaq.** secondary battery  
 and solar photoelectrochem. cell)

RN 422555-74-6 HCAPLUS

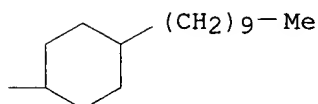
CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -[2-[4-(trans-4-  
 decylcyclohexyl)pyridinio]ethyl]- $\omega$ -[2-[4-(trans-4-  
 decylcyclohexyl)pyridinio]ethoxy]-, diiodide (9CI) (CA INDEX NAME)

PAGE 1-A



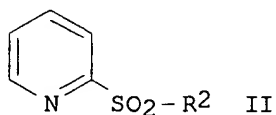
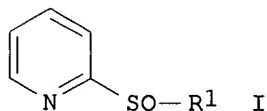
● 2 I<sup>-</sup>

PAGE 1-B

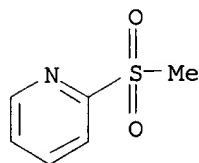


L26 ANSWER 13 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2002:349417 HCAPLUS  
 DN 136:357449  
 TI Electrolyte solution containing sulfinylpyridine or sulfonylpyridine for  
 secondary **lithium** battery  
 IN Shimada, Koji; Tai, Shinichi; Hirakawa, Daisuke  
 PA Sumitomo Seika Chemicals Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

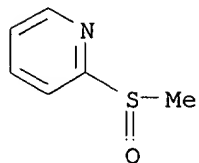
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002134168	A2	20020510	JP 2000-327880	20001027
PRAI	JP 2000-327880		20001027		
OS	MARPAT 136:357449				
GI					



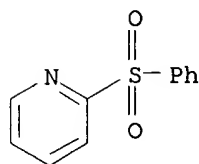
- AB The title solution contains a **nonaq.** solvent mixture containing a high-dielec.-constant solvent and a low-viscosity solvent, a **Li** salt, and 2-sulfinylpyridine derivs. I or 2-sulfonylpyridine derivs. II [R1 and R2 = C1-4 (substituted) alkyl or (substituted) Ph]. A **Li** battery using the electrolyte solution has high initial charging-discharging efficiency.
- ST sulfinylpyridine sulfonylpyridine electrolyte soln secondary **lithium** battery
- IT Battery electrolytes  
(electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary **lithium** battery)
- IT 17075-14-8, 2-Methylsulfonylpyridine 21948-75-4,  
2-Methylsulfinylpyridine 24244-60-8, 2-Phenylsulfonylpyridine  
66154-62-9 87905-04-2, 2-Ethylsulfinylpyridine  
89818-46-2, 2-Phenylsulfinylpyridine  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(**electrolyte** solution containing sulfinylpyridine or sulfonylpyridine for secondary **lithium** battery)
- IT 21324-40-3, **Lithium** hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte; electrolyte solution containing sulfinylpyridine or sulfonylpyridine for secondary **lithium** battery)
- IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6,  
Dimethyl carbonate  
RL: DEV (Device component use); USES (Uses)  
(solvent; electrolyte solution containing sulfinylpyridine or sulfonylpyridine  
for secondary **lithium** battery)
- IT 17075-14-8, 2-Methylsulfonylpyridine 21948-75-4,  
2-Methylsulfinylpyridine 24244-60-8, 2-Phenylsulfonylpyridine  
66154-62-9 87905-04-2, 2-Ethylsulfinylpyridine  
89818-46-2, 2-Phenylsulfinylpyridine  
RL: DEV (Device component use); MOA (Modifier or additive use); USES  
(Uses)  
(**electrolyte** solution containing sulfinylpyridine or sulfonylpyridine for secondary **lithium** battery)
- RN 17075-14-8 HCAPLUS
- CN Pyridine, 2-(methylsulfonyl)- (8CI, 9CI) (CA INDEX NAME)



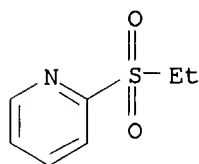
- RN 21948-75-4 HCAPLUS
- CN Pyridine, 2-(methylsulfinyl)- (8CI, 9CI) (CA INDEX NAME)



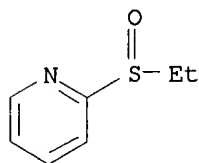
RN 24244-60-8 HCAPLUS  
CN Pyridine, 2-(phenylsulfonyl)- (8CI, 9CI) (CA INDEX NAME)



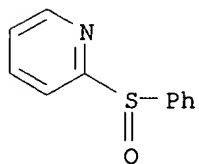
RN 66154-62-9 HCAPLUS  
CN Pyridine, 2-(ethylsulfonyl)- (9CI) (CA INDEX NAME)



RN 87905-04-2 HCAPLUS  
CN Pyridine, 2-(ethylsulfinyl)- (9CI) (CA INDEX NAME)



RN 89818-46-2 HCAPLUS  
CN Pyridine, 2-(phenylsulfinyl)- (9CI) (CA INDEX NAME)



L26 ANSWER 14 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2002:47670 HCAPLUS

DN 136:88439

TI **Nonaqueous** electrolytic solution for secondary battery

IN Hiroaki, Itagaki; Chikara, Kiyohara

PA Mitsubishi Chemical Corporation, Japan

SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1172878	A2	20020116	EP 2001-116675	20010716
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002093462	A2	20020329	JP 2001-205661	20010706
	US 2002025477	A1	20020228	US 2001-903750	20010713
PRAI	JP 2000-213624	A	20000714		

OS MARPAT 136:88439

AB A **nonaq.** electrolytic solution (containing at least an **organic solvent** and a **lithium** salt further containing a particular pyridine compound) is capable of depressing deterioration of battery properties in a high temperature environment. A secondary battery is also provided.

ST battery secondary **nonaq** electrolyte pyridine compd additive

IT Transition metal oxides

RL: DEV (Device component use); USES (Uses)

(lithiated; **nonaq.** electrolytic solution for secondary battery)

IT Secondary batteries

(lithium; **nonaq.** electrolytic solution for secondary battery)

IT Battery electrolytes

(nonaq. electrolytic solution for secondary battery)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for secondary battery)

IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution for secondary battery)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution for secondary battery)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3,

**Lithium** hexafluorophosphate 39457-42-6, **Lithium**manganese oxide 52627-24-4, Cobalt **lithium** oxide 53027-29-5,Iron **Lithium** manganese oxide 61179-01-9, Aluminum**Lithium** manganese oxide 133782-19-1, **Lithium** manganesevanadium oxide 145896-59-9, Aluminum **lithium** manganese oxideAl<sub>0.1</sub>LiMn<sub>1.9</sub>O<sub>4</sub> 153327-00-5, Gallium **Lithium** manganese oxide162684-16-4, **Lithium** manganese nickel oxide 187156-09-8,**Lithium** manganese zinc oxide 191538-04-2, Copper **Lithium**manganese oxide 204450-96-4, Chromium **Lithium** manganese oxide208394-04-1, **Lithium** manganese titanium oxide 214536-41-1,Cobalt **Lithium** manganese oxide

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for secondary battery)

IT 91-02-1, 2-Benzoylpyridine 100-70-9, 2-Cyanopyridine 114-91-0 372-48-5, 2-Fluoropyridine 487-19-4, 3-(1-Methylpyrrol-2-yl)pyridine 539-32-2, 3-Butylpyridine 580-35-8, 2,4,6-Triphenylpyridine 585-48-8, 2,6-Ditert-Butylpyridine 622-39-9, 2-Propylpyridine 644-98-4, 2-IsoPropylpyridine 696-30-0, 4-IsoPropylpyridine 700-16-3, Pentafluoropyridine 702-16-9, 2-Methyl-5-butylpyridine 1122-62-9, 2-Acetylpyridine 1122-81-2, 4-Propylpyridine 1129-69-7, 2-Hexylpyridine 1628-89-3, 2-Methoxypyridine 1658-42-0, Methyl 2-Pyridylacetate 2057-49-0, 4-(3-Phenylpropyl)pyridine 2294-76-0, 2-Pentylpyridine 2456-81-7, 4-(1-Pyrrolidinyl)pyridine 2524-52-9, 2-Pyridine carboxylic acid, ethyl ester 2530-26-9, 3-Nitropyridine 2739-97-1, 2-(Cyanomethyl)pyridine 2767-90-0, 4-Piperidinopyridine 2961-47-9, 4-(5-Nonyl)pyridine 2961-49-1, 3796-23-4, 3-Trifluoromethylpyridine 3978-81-2, 4-tert-Butylpyridine 3980-49-2 4673-31-8, 3-Propylpyridine 4783-68-0, 2-Phenoxypyridine 4810-79-1, 4-IsoButylpyridine 4810-86-0 5051-98-9, 5335-75-1, 4-Butylpyridine 5402-34-6 5683-33-0, 2-Dimethylaminopyridine 5944-41-2, 2-tert-Butylpyridine 6831-86-3, 2-tert-Butyl-6-methylpyridine 6972-69-6, N,N-Dimethylnicotinamide 7295-76-3, 3-Methoxypyridine 7399-50-0, 2-(3-Pentyl)pyridine 9002-84-0, Ptfе 17452-27-6, 3-Pyridylisothiocyanate 20336-15-6, 2,4,6-Tritert-Butylpyridine 21298-55-5, 2-(3-Thienyl)pyridine 24937-79-9, Pvdф 35182-51-5, 4-(3-Pentyl)pyridine 38222-83-2, 2,6-Ditert-Butyl-4-methylpyridine 38222-90-1 40055-37-6 40089-91-6, 4-Octylpyridine 50966-74-0 64001-70-3, 4-(1,3,4)Oxadiazol-2-ylpyridine 67580-61-4, 4-(2-Diethylaminoethyl)pyridine 70380-75-5, 5-(Pyrid-4-yl)oxazole 80401-50-9, 2-Undecylpyridine 80866-95-1, 3-(Pyrrol-1-ylmethyl)pyridine 82993-35-9 83978-69-2 87451-35-2 97691-20-8 102253-71-4, 4-(4-Pyridyl)-1,2,3-thiadiazole 387367-45-5 387367-57-9 387367-60-4

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution for secondary battery)

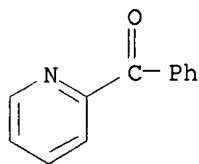
IT 91-02-1, 2-Benzoylpyridine 100-70-9, 2-Cyanopyridine 114-91-0 372-48-5, 2-Fluoropyridine 487-19-4, 3-(1-Methylpyrrol-2-yl)pyridine 539-32-2, 3-Butylpyridine 580-35-8, 2,4,6-Triphenylpyridine 585-48-8, 2,6-Ditert-Butylpyridine 622-39-9, 2-Propylpyridine 644-98-4, 2-IsoPropylpyridine 696-30-0, 4-IsoPropylpyridine 700-16-3, Pentafluoropyridine 702-16-9, 2-Methyl-5-butylpyridine 1122-62-9, 2-Acetylpyridine 1122-81-2, 4-Propylpyridine 1129-69-7, 2-Hexylpyridine 1628-89-3, 2-Methoxypyridine 1658-42-0, Methyl 2-Pyridylacetate 2057-49-0, 4-(3-Phenylpropyl)pyridine 2294-76-0, 2-Pentylpyridine 2456-81-7, 4-(1-Pyrrolidinyl)pyridine 2524-52-9, 2-Pyridine carboxylic acid, ethyl ester 2530-26-9, 3-Nitropyridine 2739-97-1, 2-(Cyanomethyl)pyridine 2767-90-0, 4-Piperidinopyridine 2961-47-9, 4-(5-Nonyl)pyridine 2961-49-1, 3796-23-4, 3-Trifluoromethylpyridine 3978-81-2, 4-tert-Butylpyridine 3980-49-2 4673-31-8,



3-Propylpyridine 4783-68-0, 2-Phenoxypyridine 4810-79-1  
 , 4-IsoButylpyridine 4810-86-0 5051-98-9  
 5335-75-1, 4-Butylpyridine 5402-34-6 5683-33-0  
 , 2-Dimethylaminopyridine 5944-41-2, 2-tert-Butylpyridine  
 6831-86-3, 2-tert-Butyl-6-methylpyridine 6972-69-6,  
 N,N-Dimethylnicotinamide 7295-76-3, 3-Methoxypyridine  
 7399-50-0, 2-(3-Pentyl)pyridine 17452-27-6,  
 3-Pyridylisothiocyanate 20336-15-6, 2,4,6-Tritert-Butylpyridine  
 21298-55-5, 2-(3-Thienyl)pyridine 35182-51-5,  
 4-(3-Pentyl)pyridine 38222-83-2, 2,6-Ditert-Butyl-4-  
 methylpyridine 38222-90-1 40055-37-6  
 40089-91-6, 4-Octylpyridine 50966-74-0  
 64001-70-3, 4-(1,3,4)Oxadiazol-2-ylpyridine 67580-61-4,  
 4-(2-Diethylaminoethyl)pyridine 70380-75-5, 5-(Pyrid-4-  
 yl)oxazole 80401-50-9, 2-Undecylpyridine 80866-95-1,  
 3-(Pyrrol-1-ylmethyl)pyridine 82993-35-9 83978-69-2  
 87451-35-2 97691-20-8 102253-71-4,  
 4-(4-Pyridyl)-1,2,3-thiadiazole 387367-45-5 387367-57-9  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolytic solution for secondary battery)

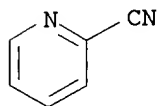
RN 91-02-1 HCAPLUS

CN Methanone, phenyl-2-pyridinyl- (9CI) (CA INDEX NAME)



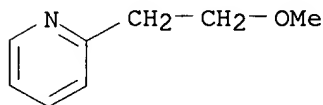
RN 100-70-9 HCAPLUS

CN 2-Pyridinecarbonitrile (9CI) (CA INDEX NAME)



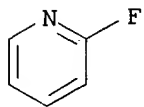
RN 114-91-0 HCAPLUS

CN Pyridine, 2-(2-methoxyethyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)

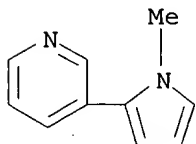


RN 372-48-5 HCAPLUS

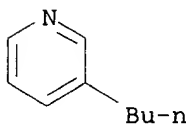
CN Pyridine, 2-fluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



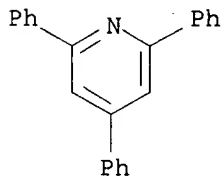
RN 487-19-4 HCAPLUS  
CN Pyridine, 3-(1-methyl-1H-pyrrol-2-yl)- (9CI) (CA INDEX NAME)



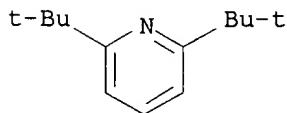
RN 539-32-2 HCAPLUS  
CN Pyridine, 3-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



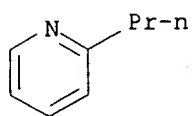
RN 580-35-8 HCAPLUS  
CN Pyridine, 2,4,6-triphenyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



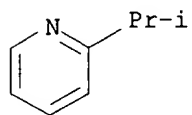
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CN Pyridine, 2,6-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



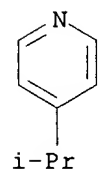
RN 622-39-9 HCAPLUS  
CN Pyridine, 2-propyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



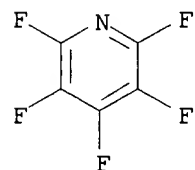
RN 644-98-4 HCAPLUS  
CN Pyridine, 2-(1-methylethyl)- (9CI) (CA INDEX NAME)



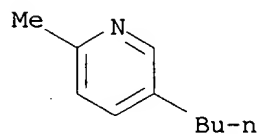
RN 696-30-0 HCAPLUS  
CN Pyridine, 4-(1-methylethyl)- (9CI) (CA INDEX NAME)



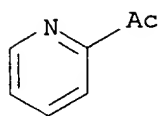
RN 700-16-3 HCAPLUS  
CN Pyridine, pentafluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



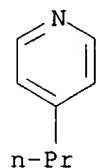
RN 702-16-9 HCAPLUS  
CN Pyridine, 5-butyl-2-methyl- (9CI) (CA INDEX NAME)



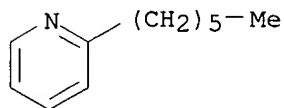
RN 1122-62-9 HCAPLUS  
CN Ethanone, 1-(2-pyridinyl)- (9CI) (CA INDEX NAME)



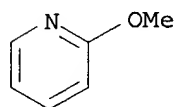
RN 1122-81-2 HCAPLUS  
CN Pyridine, 4-propyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



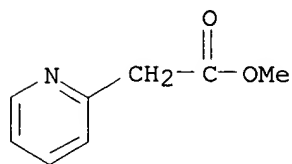
RN 1129-69-7 HCAPLUS  
CN Pyridine, 2-hexyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



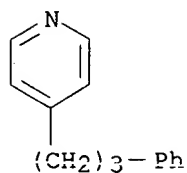
RN 1628-89-3 HCAPLUS  
CN Pyridine, 2-methoxy- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



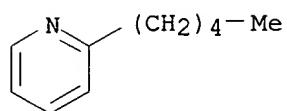
RN 1658-42-0 HCAPLUS  
CN 2-Pyridineacetic acid, methyl ester (8CI, 9CI) (CA INDEX NAME)



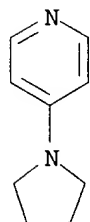
RN 2057-49-0 HCAPLUS  
CN Pyridine, 4-(3-phenylpropyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



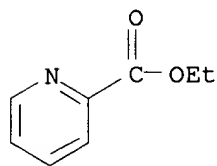
RN 2294-76-0 HCAPLUS  
CN Pyridine, 2-pentyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



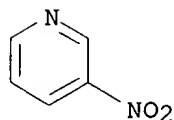
RN 2456-81-7 HCAPLUS  
CN Pyridine, 4-(1-pyrrolidinyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



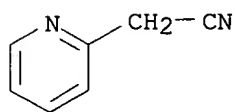
RN 2524-52-9 HCAPLUS  
CN 2-Pyridinecarboxylic acid, ethyl ester (9CI) (CA INDEX NAME)



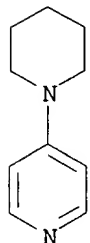
RN 2530-26-9 HCAPLUS  
CN Pyridine, 3-nitro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



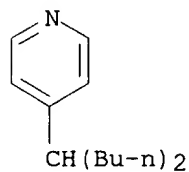
RN 2739-97-1 HCAPLUS  
CN 2-Pyridineacetonitrile (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



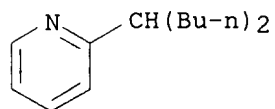
RN 2767-90-0 HCAPLUS  
CN Pyridine, 4-(1-piperidinyl)- (9CI) (CA INDEX NAME)



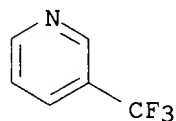
RN 2961-47-9 HCAPLUS  
CN Pyridine, 4-(1-butylpentyl)- (6CI, 8CI, 9CI) (CA INDEX NAME)



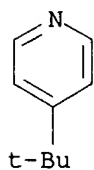
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CN Pyridine, 2-(1-butylpentyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



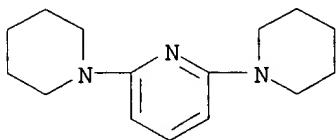
RN 3796-23-4 HCAPLUS  
CN Pyridine, 3-(trifluoromethyl)- (7CI, 8CI, 9CI) (CA INDEX NAME)



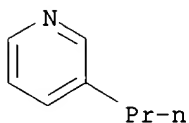
RN 3978-81-2 HCAPLUS  
CN Pyridine, 4-(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



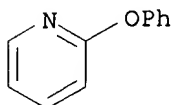
RN 3980-49-2 HCAPLUS  
CN Pyridine, 2,6-di-1-piperidiny- (9CI) (CA INDEX NAME)



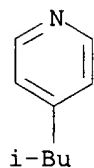
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CN Pyridine, 3-propyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



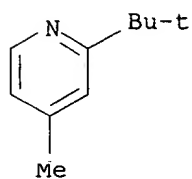
RN 4783-68-0 HCAPLUS  
CN Pyridine, 2-phenoxy- (7CI, 8CI, 9CI) (CA INDEX NAME)



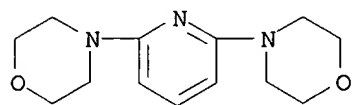
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CN Pyridine, 4-(2-methylpropyl)- (9CI) (CA INDEX NAME)



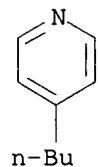
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CN Pyridine, 2-(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)



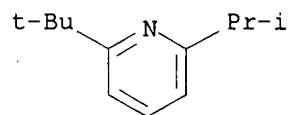
RN 5051-98-9 HCAPLUS  
CN Morpholine, 4,4'-(2,6-pyridinediyl)bis- (9CI) (CA INDEX NAME)



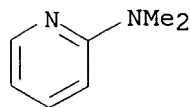
RN 5335-75-1 HCAPLUS  
CN Pyridine, 4-butyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 5402-34-6 HCAPLUS  
CN Pyridine, 2-(1,1-dimethylethyl)-6-(1-methylethyl)- (9CI) (CA INDEX NAME)

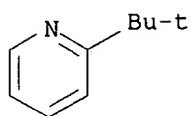


RN 5683-33-0 HCAPLUS  
CN 2-Pyridinamine, N,N-dimethyl- (9CI) (CA INDEX NAME)

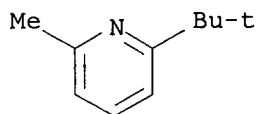


RN 5944-41-2 HCAPLUS  
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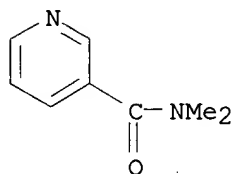




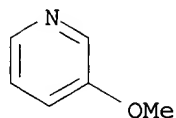
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CN Pyridine, 2-(1,1-dimethylethyl)-6-methyl- (9CI) (CA INDEX NAME)



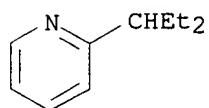
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CN 3-Pyridinecarboxamide, N,N-dimethyl- (9CI) (CA INDEX NAME)



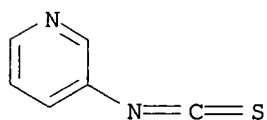
RN 7295-76-3 HCAPLUS  
CN Pyridine, 3-methoxy- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7399-50-0 HCAPLUS  
CN Pyridine, 2-(1-ethylpropyl)- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

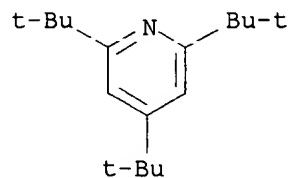


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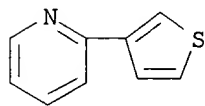
RN 20336-15-6 HCAPLUS

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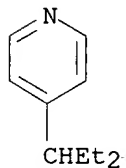
RN 21298-55-5 HCAPLUS

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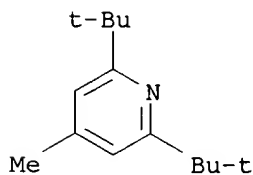
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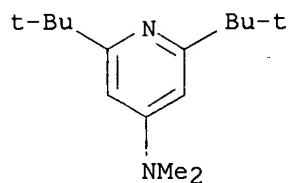
RN 38222-83-2 HCAPLUS

CN Pyridine, 2,6-bis(1,1-dimethylethyl)-4-methyl- (9CI) (CA INDEX NAME)

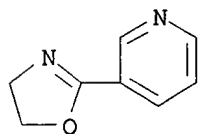


RN 38222-90-1 HCAPLUS

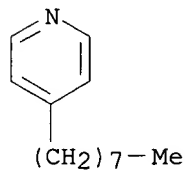
CN 4-Pyridinamine, 2,6-bis(1,1-dimethylethyl)-N,N-dimethyl- (9CI) (CA INDEX NAME)



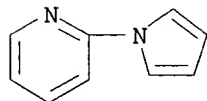
RN 40055-37-6 HCAPLUS  
CN Pyridine, 3-(4,5-dihydro-2-oxazolyl)- (9CI) (CA INDEX NAME)



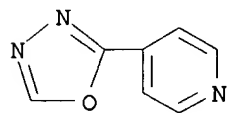
RN 40089-91-6 HCAPLUS  
CN Pyridine, 4-octyl- (9CI) (CA INDEX NAME)



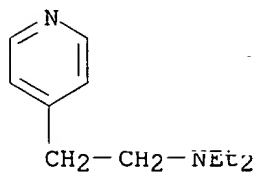
RN 50966-74-0 HCAPLUS  
CN Pyridine, 2-(1H-pyrrol-1-yl)- (9CI) (CA INDEX NAME)



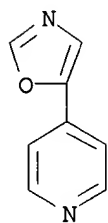
RN 64001-70-3 HCAPLUS  
CN Pyridine, 4-(1,3,4-oxadiazol-2-yl)- (6CI, 9CI) (CA INDEX NAME)



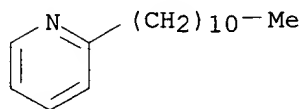
RN 67580-61-4 HCAPLUS  
CN 4-Pyridineethanamine, N,N-diethyl- (9CI) (CA INDEX NAME)



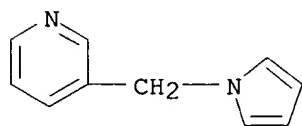
RN 70380-75-5 HCAPLUS  
CN Pyridine, 4-(5-oxazolyl)- (9CI) (CA INDEX NAME)



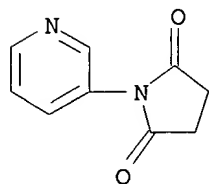
RN 80401-50-9 HCAPLUS  
CN Pyridine, 2-undecyl- (6CI, 9CI) (CA INDEX NAME)



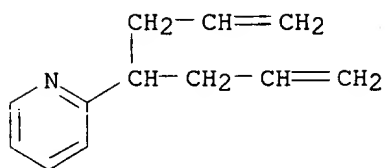
RN 80866-95-1 HCAPLUS  
CN Pyridine, 3-(1H-pyrrol-1-ylmethyl)- (9CI) (CA INDEX NAME)



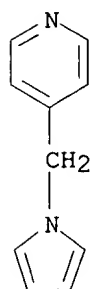
RN 82993-35-9 HCAPLUS  
CN 2,5-Pyrrolidinedione, 1-(3-pyridinyl)- (9CI) (CA INDEX NAME)



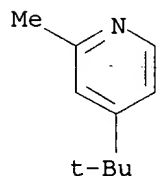
RN 83978-69-2 HCAPLUS  
CN Pyridine, 2-[1-(2-propenyl)-3-butenyl]- (9CI) (CA INDEX NAME)



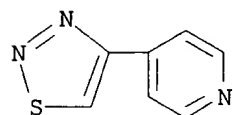
RN 87451-35-2 HCAPLUS  
CN Pyridine, 4-(1H-pyrrol-1-ylmethyl)- (9CI) (CA INDEX NAME)



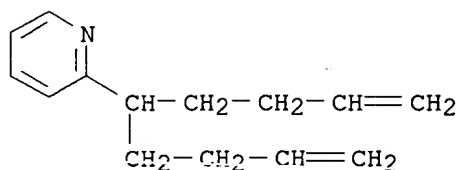
RN 97691-20-8 HCAPLUS  
CN Pyridine, 4-(1,1-dimethylethyl)-2-methyl- (9CI) (CA INDEX NAME)



RN 102253-71-4 HCAPLUS  
CN Pyridine, 4-(1,2,3-thiadiazol-4-yl)- (9CI) (CA INDEX NAME)

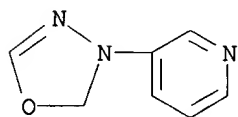


RN 387367-45-5 HCAPLUS  
CN Pyridine, 2-[1-(3-butenyl)-4-pentenyl]- (9CI) (CA INDEX NAME)



RN 387367-57-9 HCAPLUS

CN Pyridine, 3-(1,3,4-oxadiazol-3(2H)-yl)- (9CI) (CA INDEX NAME)



L26 ANSWER 15 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2001:933910 HCAPLUS

DN 136:72280

TI Secondary **nonaqueous** electrolyte battery

IN Higashimoto, Koji; Suzuki, Katsunori; Iguchi, Tomohiro; Hironaka, Kensuke

PA Shin-Kobe Electric Machinery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001357874	A2	20001226	JP 2000-176281	20000613
PRAI	JP 2000-176281		20000613		

AB The battery has a **Li** intercalating cathode, a **Li** intercalating anode, and a **nonaq.** electrolyte solution; where the electrolyte solution contains a leveling agent prevent concentrated deposition of metal ions on cathode and/or anode.

ST secondary **lithium** battery electrolyte metal deposition leveling agent

IT Azo dyes

(electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary **lithium** batteries)

IT Aldehydes, uses

Gelatins, uses

RL: MOA (Modifier or additive use); USES (Uses)

(electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary **lithium** batteries)

IT Secondary batteries

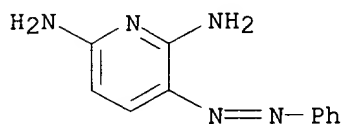
(**lithium**; electrolyte solns. containing additives preventing concentrated metal deposition on electrodes in secondary **lithium** batteries)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3,  
**Lithium** hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solns. containing additives preventing concentrated metal  
 deposition  
 on electrodes in secondary **lithium** batteries)

IT 81-07-2, Saccharine 91-63-4, Quinaldine 109-78-4, Ethylene cyanohydrin  
 110-64-5, 2-Butene-1,4-diol **136-40-3D**, Pyridium, compds.  
 333-20-0, Potassium thiocyanate 1655-29-4, Sodium 1,5-  
 naphthalenedisulfonate 7320-34-5, Potassium pyrophosphate 10533-44-5  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte solns. containing additives preventing concentrated metal  
 deposition on electrodes in secondary **lithium** batteries)

IT **136-40-3D**, Pyridium, compds.  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte solns. containing additives preventing concentrated metal  
 deposition on electrodes in secondary **lithium** batteries)

RN 136-40-3 HCAPLUS  
 CN 2,6-Pyridinediamine, 3-(phenylazo)-, monohydrochloride (9CI) (CA INDEX  
 NAME)



● HCl

L26 ANSWER 16 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2001:919231 HCAPLUS

DN 136:56375

TI Liquid crystal electrolyte and secondary battery

IN Nakamura, Shinichi; Igawa, Satoshi

PA Canon Inc., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001351683	A2	20011221	JP 2000-170253	20000607
PRAI	JP 2000-170253		20000607		

AB The electrolyte contains a metal salt and a liquid crystal compound having H  
 bond. The salt is preferably an alkali metal salt, the liquid crystal has  
 the H bond formed between H and N, and the electrolyte may contain an  
**organic solvent** or a polyether.

ST battery electrolyte hydrogen bond liq crystal compd

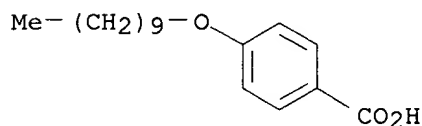
IT Battery electrolytes

(compns. of electrolytes containing alkaline metal salts and hydrogen bond  
 liquid

crystal compds. for secondary battery)  
 IT 7791-03-9, **Lithium** perchlorate 33454-82-9, **Lithium**  
 trifluoromethanesulfonate 179418-04-3 **381726-17-6**  
 RL: DEV (Device component use); USES (Uses)  
 (compns. of **electrolytes** containing alkaline metal salts and hydrogen  
 bond liquid crystal compds. for secondary battery)  
 IT **381726-17-6**  
 RL: DEV (Device component use); USES (Uses)  
 (compns. of **electrolytes** containing alkaline metal salts and hydrogen  
 bond liquid crystal compds. for secondary battery)  
 RN 381726-17-6 HCAPLUS  
 CN Benzoic acid, 4-(decyloxy)-, compd. with 4,4'-bipyridine (2:1) (9CI) (CA  
 INDEX NAME)

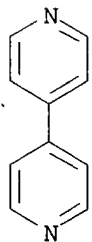
CM 1

CRN 5519-23-3  
 CMF C17 H26 O3



CM 2

CRN 553-26-4  
 CMF C10 H8 N2



L26 ANSWER 17 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2001:731243 HCAPLUS  
 DN 135:291346  
 TI Secondary **lithium** batteries  
 IN Yang, Li; Yoshida, Toshihiro; Nemoto, Hiroshi; Takahashi, Michio  
 PA NGK Insulators, Ltd., Japan  
 SO PCT Int. Appl., 67 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1



	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001073884	A1	20011004	WO 2001-JP1135	20010216
	W: CA, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	JP 2001273927	A2	20011005	JP 2000-89934	20000328
	JP 2001283907	A2	20011012	JP 2000-89936	20000328
	JP 2001283919	A2	20011012	JP 2000-89965	20000328
	JP 2001283920	A2	20011012	JP 2000-89972	20000328
	JP 2001283921	A2	20011012	JP 2000-89974	20000328
	EP 1202374	A1	20020502	EP 2001-904518	20010216
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	US 2003190530	A1	20031009	US 2001-9216	20011108
PRAI	JP 2000-89934	A	20000328		
	JP 2000-89936	A	20000328		
	JP 2000-89965	A	20000328		
	JP 2000-89972	A	20000328		
	JP 2000-89974	A	20000328		
	WO 2001-JP1135	W	20010216		
AB	The batteries have a coiled electrode/separator stack and a <b>nonaq</b> . <b>Li</b> salt electrolyte solution, where the cathode, anode, separator, and/or the electrolyte solution contain organic and/or inorg. Cu corrosion inhibitor or Cu trapping agent, a compound containing both basic organic groups and inorg. acid groups, a N-O radical containing cyclic compound, a compound not containing Lewis acid atoms and Lewis base atoms at the same time, a 3-dimensional siloxane compound, and/or a nonionic surfactant, and/or a cyclic Mn <sup>2+</sup> source in the electrolytes; and the electrolyte soln contains a water trapping agent or a HF trapping agent.				
ST	secondary <b>lithium</b> battery electrode electrolyte separator additive; copper corrosion inhibitor secondary <b>lithium</b> battery; trapping agents secondary <b>lithium</b> batteries; water trapping agents secondary <b>lithium</b> batteries; hydrofluoric acid trapping agents secondary <b>lithium</b> batteries				
IT	Secondary batteries ( <b>lithium</b> ; additives for electrodes and separators and electrolyte solns. in secondary <b>lithium</b> batteries)				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 126-73-8, Tributyl phosphate, uses 617-86-7, Triethylsilane 7440-44-0, Carbon, uses 12057-17-9, <b>Lithium</b> manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> ) 21324-40-3, <b>Lithium</b> hexafluorophosphate RL: DEV (Device component use); USES (Uses) (additives for electrodes and separators and electrolyte solns. in secondary <b>lithium</b> batteries)				
IT	95-14-7, 1,2,3-Benzotriazole 128-94-9, 1,8-Diamino-4,5-dihydroxyanthraquinone 2564-83-2 9004-99-3 9014-92-0, Polyethylene glycol mono-dodecylphenyl ether 14325-24-7, Manganese (II) phthalocyanine 14691-88-4 16011-96-4, 2-Iminopiperidine hydrochloride 26027-38-3, Polyethylene glycol mono-4-nonylphenyl ether 26635-92-7 34272-83-8 207505-82-6 213453-16-8 <b>364589-08-2</b> <b>364589-09-3</b> RL: MOA (Modifier or additive use); USES (Uses) (additives for electrodes and separators and <b>electrolyte</b> solns. in secondary <b>lithium</b> batteries)				
RE.CNT.	12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD				
RE					

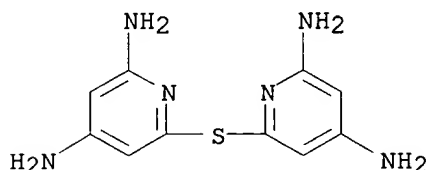
- (1) Denso Corporation; JP 09139233 A 1997 HCAPLUS
- (2) Hitachi Ltd; WO 0013251 A HCAPLUS
- (3) Hitachi Ltd; JP 200077103 A 2000
- (4) Japan Storage Battery Co Ltd; JP 1167233 A 1999
- (5) Mitsui Chemicals Ltd; JP 200012080 2000
- (6) Samsung Display Devices Co Ltd; GB 2328786 A HCAPLUS
- (7) Samsung Display Devices Co Ltd; JP 11126633 A 1999
- (8) Sanyo Electric Co Ltd; JP 660877 A 1994
- (9) Sanyo Electric Co Ltd; JP 2000268861 A 2000 HCAPLUS
- (10) Sony Corporation; JP 200058123 A 2000
- (11) The Furukawa Electric Co Ltd; JP 11273683 A 1999 HCAPLUS
- (12) Toyota Central Research And Development Laboratories Inc; JP 1116602 A 1999

IT 364589-08-2 364589-09-3

RL: MOA (Modifier or additive use); USES (Uses)  
(additives for electrodes and separators and **electrolyte**  
solns. in secondary **lithium** batteries)

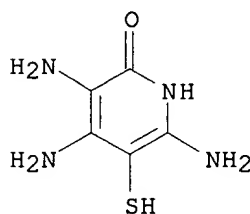
RN 364589-08-2 HCAPLUS

CN 2,4-Pyridinediamine, 6,6'-thiobis- (9CI) (CA INDEX NAME)



RN 364589-09-3 HCAPLUS

CN 2(1H)-Pyridinone, 3,4,6-triamino-5-mercapto- (9CI) (CA INDEX NAME)



L26 ANSWER 18 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2001:676478 HCAPLUS

DN 135:229377

TI Gel electrolyte precursors and batteries

IN Hayase, Shuji; Mikoshiba, Satoru; Miyamoto, Hirohisa; Takami, Norio

PA Toshiba Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 28 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

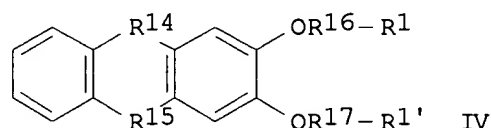
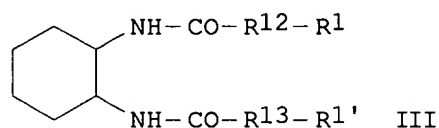
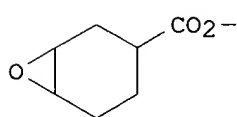
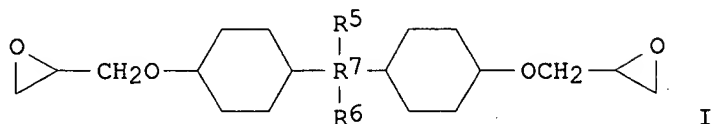
IC ICM H01M010-40

ICS H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001250584	A2	20010914	JP 2000-393534	20001225
	US 2001023041	A1	20010920	US 2000-748007	20001227
PRAI	JP 1999-374997	A	19991228		
GI					



AB The batteries have a cathode, an anode, and a gel electrolyte, containing an electrolyte solution and a crosslinked product of an alicyclic epoxy resin or an epoxy compound, having alicyclic structure and  $\geq 1$  epoxy group/mol. The crosslinked product contains  $-(CR_1R_2CR_3R_4)_n$  units ( $R_1, R_2$  = alkyl or aralkyl groups;  $R_3, R_4$  = H or alkyl groups;  $n$  = natural number), the epoxy compound is I ( $R_5, R_6$  = H or alkyl groups,  $R_7$  = C, O,  $SO_2$ , or CO), the epoxy resin contain units II, and the electrolyte solution contains a **nonaq** solvent and a Li salt selected from  $LiBF_4$  and  $LiPF_6$ . The gel electrolyte precursors contain the electrolyte solution and gelling agent containing the epoxy compound and/or the alicyclic epoxy resin. Another type

of

the electrolyte is an onium salt polymer comprising a halogen containing compound and a N, P, or S compound selected from  $R_1R_2CONHCHR_3CONHR_4$  ( $R_1$  = halogen, halogenated organic group, or N, P, or S containing group;  $R_2$  =

bivalent

organic group;  $R_3$  and  $R_4$  = monovalent organic group),  $R_1R_5CONHCHR_6CONURNHCOR_8NHCOR_9R_1'$  ( $R_1'$  has same definition as  $R_1$ ;  $R_6, R_8$  = monovalent organic groups;  $R_7, R_9$  = divalent organic groups),  $R_1ONHCOCH(OH)CH(OH)CH(OH)CH_2OR_11R_1$  ( $R_{10}$  = monovalent organic group,  $R_{11}$  = bivalent organic group), III ( $R_{12}, R_{13}$  = bivalent organic groups), IV ( $R_{14},$

R15

=  $-CO-$  or  $-CH_2-$ ;  $R_{16}, R_{17}$  = bivalent organic groups),  $R_1R_{18}NHCONHR_{19}R_1'$  ( $R_{18}, R_{19}$  = bivalent organic groups), or  $R_1R_{20}NHCONHR_{21}NHCOCHR_{22}R_1'$  [ $R_{20}, R_{22}$  = bivalent organic groups,  $R_{21}$  = monovalent organic group (sic)].

ST battery crosslinked alicyclic epoxy resin gel electrolyte

IT Epoxy resins, uses

RL: DEV (Device component use); USES (Uses)

(alicyclic, crosslinked; compns. of gel electrolyte precursors and secondary lithium batteries with gel electrolytes)

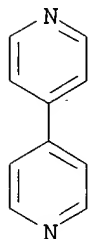
IT Battery electrolytes  
 (compns. of gel electrolyte precursors and secondary **lithium**  
 batteries with gel electrolytes)

IT 18393-55-0D, Triphenylsulfonium, salts 57835-99-1, Triphenylsulfonium  
 hexafluorophosphate 192391-58-5, Sanaid SI 60  
 RL: CAT (Catalyst use); DEV (Device component use); USES (Uses)  
 (compns. of gel electrolyte precursors and secondary **lithium**  
 batteries with gel electrolytes)

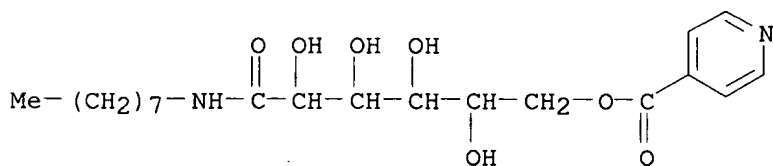
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
**553-26-4**, 4,4'-Bipyridine 2386-87-0 13410-58-7 14283-07-9,  
**Lithium** fluoroborate 15390-22-4 24806-62-0 25085-98-7D,  
 celloxide 2021, crosslinked 59333-65-2 82428-30-6 83343-61-7,  
 Dibromohexane 109695-55-8 131826-14-7 151465-23-5D, celloxide 2081,  
 crosslinked 269403-56-7 **330628-15-4 330628-16-5**  
**330628-19-8 359399-29-4** 359399-30-7 359399-32-9  
 359399-33-0 359399-34-1 359399-35-2 359399-36-3 359399-37-4  
 359399-40-9 359399-41-0  
 RL: DEV (Device component use); USES (Uses)  
 (compns. of gel **electrolyte** precursors and secondary  
**lithium** batteries with gel **electrolytes**)

IT **553-26-4**, 4,4'-Bipyridine **330628-15-4**  
**330628-16-5 330628-19-8 359399-29-4**  
 RL: DEV (Device component use); USES (Uses)  
 (compns. of gel **electrolyte** precursors and secondary  
**lithium** batteries with gel **electrolytes**)

RN 553-26-4 HCAPLUS  
 CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)

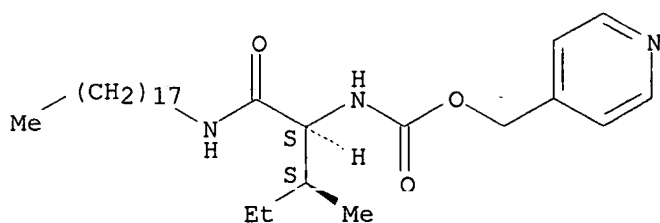


RN 330628-15-4 HCAPLUS  
 CN Hexonamide, N-octyl-, 6-(4-pyridinecarboxylate) (9CI) (CA INDEX NAME)

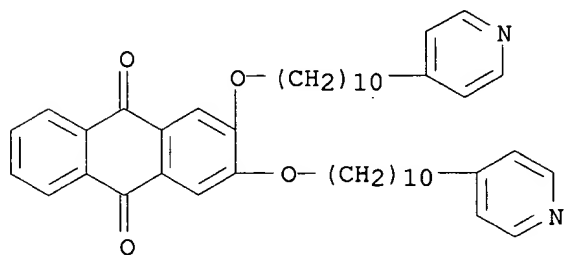


RN 330628-16-5 HCAPLUS  
 CN Carbamic acid, [(1S,2S)-2-methyl-1-[(octadecylamino)carbonyl]butyl]-,  
 4-pyridinylmethyl ester (9CI) (CA INDEX NAME)

Absolute stereochemistry.

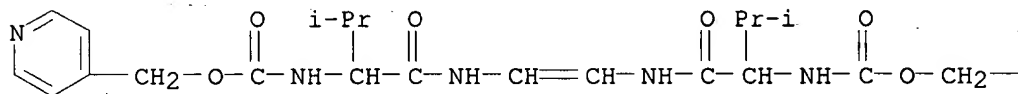


RN 330628-19-8 HCAPLUS  
 CN 9,10-Anthracenedione, 2,3-bis[[10-(4-pyridinyl)decyl]oxy]- (9CI) (CA INDEX NAME)

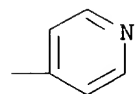


RN 359399-29-4 HCAPLUS  
 CN 2,5,8,11-Tetraazadodec-6-enedioic acid, 3,10-bis(1-methylethyl)-4,9-dioxo-, bis(4-pyridinylmethyl) ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L26 ANSWER 19 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2001:531955 HCAPLUS  
 DN 135:124958  
 TI Polymerizing molten salt monomer, electrolyte composition, and electrochemical cell  
 IN Ono, Michio; Sen, Masakazu  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 32 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese

IC ICM C07D213-30  
 ICS C07D233-60; C07D233-64; C08F299-00; C08K003-16; C08L055-00;  
 H01B001-06; H01B001-12; H01L031-04; H01M010-40; H01M014-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 35, 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001199961	A2	20010724	JP 2000-13048	20000121
	US 2001026890	A1	20011004	US 2001-765368	<u>20010122</u>
PRAI	JP 2000-13048	A	20000121		
OS	MARPAT 135:124958				

AB The title monomer is represented as Q[Y1(CH<sub>2</sub>CH<sub>2</sub>O)<sub>n</sub>Y<sub>2</sub>]<sub>m</sub>X [Q = N-containing aromatic heterocyclic group for forming a cation; Y1 = divalent bond; Y2 = (substituted) alkyl; n = 2-20 integer; m = ≥2 integer; X = anion; ≥1 of Y2 contains a polymerizing group; Q or Y2 may be linked to give a dimer or a tetramer]. The title electrolyte composition contains a polymer obtained by polymerizing the monomer. An electrochem. cell containing the electrolyte composition is also claimed. Preferably, the cell contains a charge-transfer layer containing the electrolyte composition and a

photosensitive

layer containing a dye-sensitized semiconductor. The electrolyte composition has

high charge-transfer property, photoelec. conversion efficiency, durability, and ion conductivity and is especially suitable for a secondary **nonaq.** battery and a solar cell.

ST polymg pyridinium molten salt monomer electrolyte compn electrochem cell; imidazolium polymg molten salt monomer electrolyte compn photoelectrochem cell; **nonaq** battery pyridinium polymer electrolyte compn; solar cell pyridinium polymer electrolyte compn

IT Onium compounds

RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(imidazolium compds., polymers; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Secondary batteries

(**lithium**; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Ionic conductors

(polymeric; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Pyridinium compounds

RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polymers; polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT Battery electrolytes

Photoelectrochemical cells

Polymer electrolytes

Solar cells

(polymerizing molten salt monomer for polymer electrolyte composition in electrochem. cell)

IT 351182-07-5P 351182-10-0P 351182-13-3P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT

(Reactant or reagent)

(preparation and polymerization of; in preparation of polymerizing molten salt monomer for

polymer electrolyte composition)

IT 42749-28-0P 77544-60-6P 136399-06-9P 136399-07-0P 188915-78-8P  
 188915-80-2P 351181-98-1P 351181-99-2P 351182-00-8P 351182-01-9P  
 351182-02-0P 351182-03-1P 351182-04-2P 351182-05-3P 351182-06-4P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
 (Reactant or reagent)

(preparation and reaction of; in preparation of polymerizing molten salt monomer for

polymer electrolyte composition)

IT 351182-09-7P 351182-12-2P 351182-15-5P

RL: IMF (Industrial manufacture); PREP (Preparation)

(preparation of; in preparation of polymerizing molten salt monomer for polymer

electrolyte composition)

IT 351182-16-6P 351182-17-7P 351182-19-9P 351182-21-3P 351182-22-4P  
 351182-24-6P **351182-26-8P 351182-29-1P**

RL: DEV (Device component use); IMF (Industrial manufacture); PRP  
 (Properties); TEM (Technical or engineered material use); PREP  
 (Preparation); USES (Uses)

(preparation of; polymerizing molten salt monomer for polymer **electrolyte** composition in electrochem. cell)

IT 98-59-9, p-Toluenesulfonyl chloride 112-60-7, Tetraethylene glycol  
 288-32-4, Imidazole, reactions 814-68-6, 2-Propenoyl chloride  
 2615-15-8, Hexaethylene glycol 3304-70-9 4296-15-5, 2-Methoxy ethyl  
 iodide 14104-20-2, Silver tetrafluoroborate 52808-36-3 52995-76-3  
 90076-65-6, **Lithium** bis(trifluoromethylsulfonyl)amide  
 113694-55-6 143127-81-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of; in preparation of polymerizing molten salt monomer for polymer electrolyte composition)

IT **351182-26-8P 351182-29-1P**

RL: DEV (Device component use); IMF (Industrial manufacture); PRP  
 (Properties); TEM (Technical or engineered material use); PREP  
 (Preparation); USES (Uses)

(preparation of; polymerizing molten salt monomer for polymer **electrolyte** composition in electrochem. cell)

RN 351182-26-8 HCAPLUS

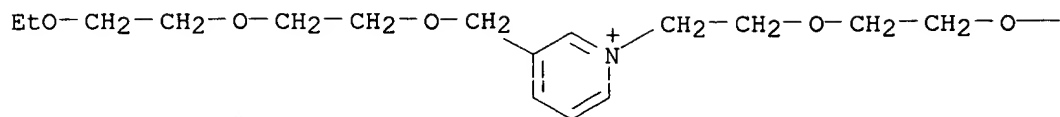
CN Pyridinium, 3-[[2-(2-ethoxyethoxy)ethoxy)methyl]-1-(19-oxo-3,6,9,12,15,18-hexaoxaheneicos-20-en-1-yl)-, iodide, polymer with  $\alpha$ -(1-oxo-2-propenyl)- $\omega$ -[(1-oxo-2-propenyl)oxy]poly(oxy-1,2-ethanediyl) (9CI)  
 (CA INDEX NAME)

CM 1

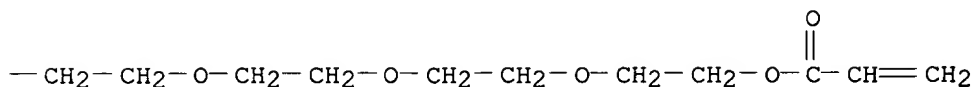
CRN 351182-25-7

CMF C27 H46 N O10 . I

PAGE 1-A



PAGE 1-B

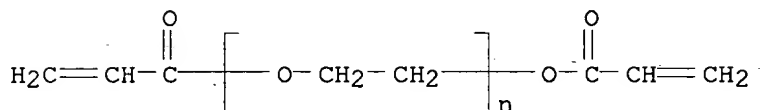


CM 2

CRN 26570-48-9

CMF (C2 H4 O)<sub>n</sub> C6 H6 O3

CCI PMS



RN 351182-29-1 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α,α'-[1,2-ethanediylbis(oxy-2,1-ethanediylloxymethylenepyridinium-3,1-diyl-2,1-ethanediyl)]bis[ω-[(1-oxo-2-propenyl)oxy]-, diiodide, polymer with α-(1-oxo-2-propenyl)-ω-[2-[3,5-bis[[2-(2-ethoxyethoxy)ethoxy]methyl]pyridinio]ethyl]poly(oxy-1,2-ethanediyl) iodide (9CI) (CA INDEX NAME)

CM 1

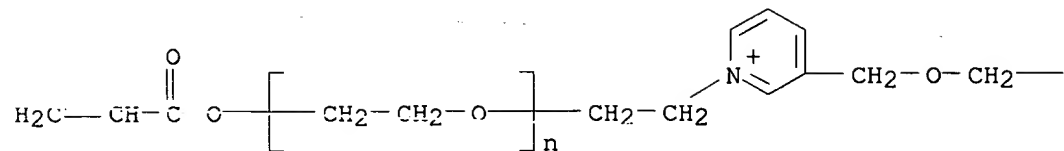
CRN 351182-28-0

CMF (C2 H4 O)<sub>n</sub> (C2 H4 O)<sub>n</sub> C26 H34 N2 O7 . 2 I

CCI PMS

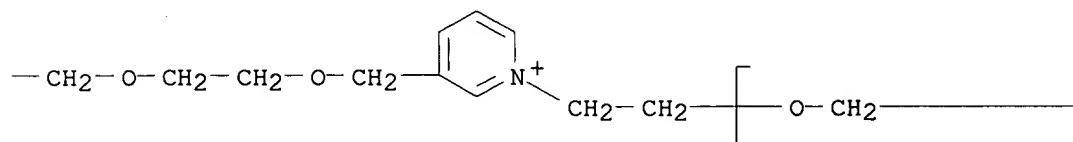


PAGE 1-A

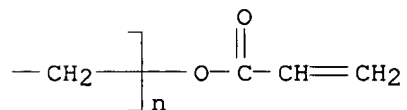


● 2 I<sup>-</sup>

PAGE 1-B



PAGE 1-C



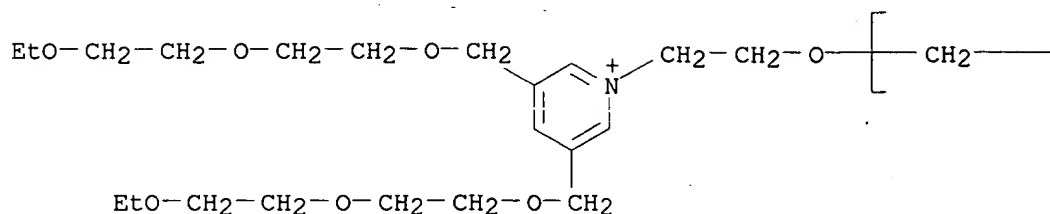
CM 2

CRN 351182-27-9

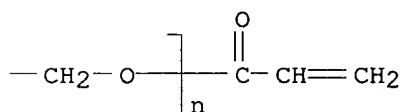
CMF (C2 H4 O)<sub>n</sub> C24 H40 N O8 . I

CCI PMS

PAGE 1-A

● I<sup>-</sup>

PAGE 1-B



- L26 ANSWER 20 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2001:179534 HCAPLUS  
 DN 134:342446  
 TI New and novel **lithium** imide electrolytes and copolymers:  
 Synthesis and characterization for **lithium** rechargeable  
 batteries  
 AU Venkatasetty, H. V.  
 CS H.V. Setty Enterprises, Inc., Burnsville, MN, USA  
 SO Annual Battery Conference on Applications and Advances, 16th, Long Beach,  
 CA, United States, Jan. 9-12, 2001 (2001), 277-282. Editor(s): Das, Radhe  
 S. L.; Frank, Harvey. Publisher: Institute of Electrical and Electronics  
 Engineers, New York, N. Y.  
 CODEN: 69BADB  
 DT Conference  
 LA English  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38  
 AB Several new and novel **Lithium** imide salts were synthesized and  
 characterized for their conductivities and electrochem. stabilities in  
**nonaq.** solvent mixts. Many copolymers and diblock copolymers  
 using monomers such as polyethylene glycol methacrylate of different mol.  
 wts. and/or poly(lauryl methacrylate) were synthesized and characterized.  
 Solid polymer electrolytes with promising **Li** salts and  
 copolymers were prepared with different **Li**/O ratios and varying  
 ratios of copolymers and polyethylene oxide with inert additives. Their  
 conductivities and electrochem. stabilities were measured. All  
**Lithium** imide salts and copolymer-based solid polymer electrolyte  
 films are found to be stable from 0 to 4.5 V vs. **Li**. The  
 solubilities and the conductivities of **Li** imide salts are found  
 to depend on their structure. The phys. properties of copolymers are  
 known to depend on the type and the mol. weight of the monomer used and the  
 polymerization process. The solid polymer electrolyte films containing a large

fraction of the copolymers in the mixture with polyethylene oxide and **Li** salts show much improved conductivity at room temperature Both the solid polymer electrolyte films and the **Li** imide salt solns. have been used in **Li** cells to evaluate their performance. The performance data of cells with these electrolytes are discussed in terms of their structures and compns.

ST **lithium** battery **lithium** imide electrolyte copolymer

IT Secondary batteries

(**lithium**; synthesis and characterization of **lithium** imide electrolytes and copolymers for **lithium** rechargeable batteries)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(polymers, complexes with **lithium** trifluoromethylsulfonyl perfluorobutylsulfonamide; synthesis and characterization of **lithium** imide electrolytes and copolymers for **lithium** rechargeable batteries)

IT Battery electrolytes

Electric conductivity

(synthesis and characterization of **lithium** imide electrolytes and copolymers for **lithium** rechargeable batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate

RL: DEV (Device component use); USES (Uses)

(synthesis and characterization of **lithium** imide electrolytes and copolymers for **lithium** rechargeable batteries)

IT 25322-68-3DP, Polyethylene glycol, polymers, complexes with

**lithium** trifluoromethylsulfonyl perfluorobutylsulfonamide

176719-70-3P **338746-27-3P** 338746-28-4P 338746-29-5P

338746-30-8P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(synthesis and characterization of **lithium** imide **electrolytes** and copolymers for **lithium** rechargeable batteries)

IT 13463-67-7, Titania, uses

RL: MOA (Modifier or additive use); USES (Uses)

(synthesis and characterization of **lithium** imide electrolytes and copolymers for **lithium** rechargeable batteries)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; Polymer Electrolytes Review 1987, P275

(2) Armand, M; Solid State Ionics 1994, V69, P309 HCAPLUS

(3) Capuno, F; J of Electrochem Soc 1991, V138, P1918

(4) Dias, F; J of Power Source 2000, V88, P169 HCAPLUS

(5) Venkatasetty, H; J of Power Sources (submitted)

(6) Venkatasetty, H; Proc of 15th Annual Battery Conference on Applications and Advances 2000

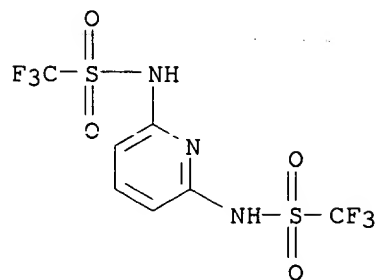
IT **338746-27-3P**

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(synthesis and characterization of **lithium** imide **electrolytes** and copolymers for **lithium** rechargeable batteries)

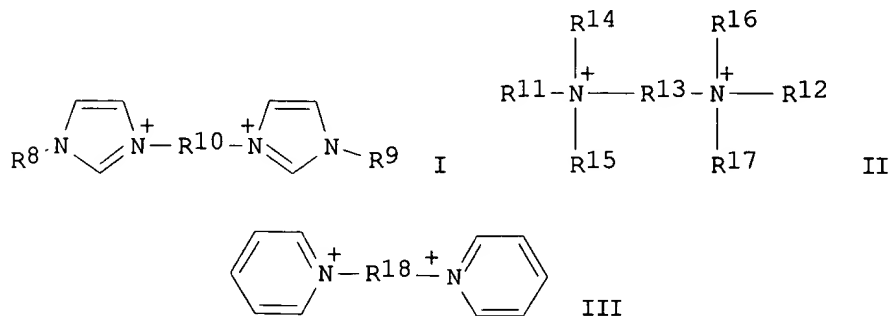
RN 338746-27-3 HCAPLUS

CN Methanesulfonamide, N,N'-2,6-pyridinediylbis[1,1,1-trifluoro- (9CI) (CA INDEX NAME)



L26 ANSWER 21 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2000:723536 HCAPLUS  
 DN 133:298800  
 TI Carbonaceous materials and their manufacture, vanadium oxide derivatives,  
 solid ion conductive electrochemical elements, and secondary  
**nonaqueous** electrolyte batteries  
 IN Watanabe, Kazuhiro; Nichogi, Katsuhiko; Nanai, Satonari; Miyamoto, Akihito  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M004-58  
 ICS C01B031-02; H01M004-02; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000285921	A2	20001013	JP 1999-155011	19990602
PRAI	JP 1998-163134	A	19980611		
	JP 1999-16754	A	19990126		
OS	MARPAT 133:298800				
GI					



AB The carbonaceous materials are heat treated hardened resin, and are prepared  
 by mixing the resin with an aromatic compds. having 2-10 rings and hardening  
 the mixture The solid ion electrochem. elements contain cations selected  
 from imidazole radical ion or its derivative, having aliphatic C connected to  
 the

N atoms, quaternary ammonium ion, I (R8 and R9 = substituents having aliphatic C connected directly to N; R10 = aliphatic C containing group), II (R14-R17 = substituents having aliphatic C connected directly to N; R11-R13 = C containing groups which may also contain aromatic groups), III (R18 = substituent containing aliphatic C), and IV (R21 and R22 = substituents having aliphatic C connected directly to N) mixed with other cations, e.g., metal ions selected from alkali metals, alkaline earth, Ag, Cu, and Zn. The batteries use the carbonaceous material for **Li** intercalating anodes, the conductive material as solid electrolyte, and V oxide derivs.,  $AxV4-zMzO11$  or  $AxBzV4-zMzO11$  (A and B and M are metals,  $x \leq 4$ ,  $y \leq 4$ , and  $z \leq 4$ ) for cathodes.

- ST secondary **lithium** battery compn component; carbonaceous material anode secondary **lithium** battery; quaternary ammonium compd electrolyte secondary **lithium** battery; vanadium oxide cathode secondary **lithium** battery
- IT Battery electrolytes  
(electrolyte solns. containing quaternary ammonium salts and other salts for secondary **lithium** batteries)
- IT Secondary batteries  
(**lithium**; electrode and electrolyte components for secondary **lithium** batteries)
- IT Battery anodes  
(manufacture of carbonaceous materials from phenolic resin mixed with condensed ring compds. for anode in secondary **lithium** batteries)
- IT Carbonaceous materials (technological products)  
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)  
(manufacture of carbonaceous materials from phenolic resin mixed with condensed ring compds. for anode in secondary **lithium** batteries)
- IT Phenolic resins, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(manufacture of carbonaceous materials from phenolic resin mixed with condensed ring compds. for anode in secondary **lithium** batteries)
- IT Battery cathodes  
(substituted copper vanadium oxide cathodes for secondary solid electrolyte **lithium** batteries with carbonaceous anodes)
- IT 96-49-1, Ethylene carbonate 106-93-4D, 1,2-Dibromoethane, reaction products with 1-methylimidazole 108-32-7, Propylene carbonate 110-86-1D, Pyridine, reaction products with 1,2-dibromoethane, uses 121-44-8D, Triethylamine, reaction products with 1,2-diiodoethane 121-44-8D, Triethylamine, reaction products with triethylamine 429-07-2, Tetraethylammonium hexafluorophosphate 616-47-7D, 1-Methylimidazole, reaction products with dibromo hydrocarbons 629-03-8D, 1,6-Dibromohexane, reaction products with 1-methylimidazole 13814-93-2, Calcium fluoroborate 13826-88-5, Zinc fluoroborate 16941-11-0, Ammonium hexafluorophosphate 21324-40-3, **Lithium** hexafluorophosphate 26042-63-7, Silver hexafluorophosphate 37275-48-2D, Bipyridine, N,N'-dialkyl derivs. 61175-74-4, Triethylphenylammonium bromide 155371-19-0, 1-Ethyl-3-methylimidazolium hexafluorophosphate **301358-91-8**  
RL: DEV (Device component use); USES (Uses)  
(**electrolyte** solns. containing quaternary ammonium salts and other salts for secondary **lithium** batteries)
- IT 90-15-3, 1-Naphthalenol 91-20-3, Naphthalene, processes 190-26-1, Ovalene 191-07-1, Coronene 191-35-5, 3H-Benzo[cd]pyrene 3074-00-8,

6H-Benzo[cd]pyren-6-one 117955-70-1, Coronenol 130643-27-5,  
 2H-Naphth[2,1,8,7-hijk]ovalene 301358-89-4, 2-Ovalenol  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (manufacture of carbonaceous materials from phenolic resin mixed with  
 condensed ring compds. for anode in secondary **lithium**  
 batteries)

IT 301358-93-0, Copper vanadium oxide (Cu<sub>2</sub>Li<sub>1.8</sub>V<sub>4</sub>O<sub>11</sub>) 301358-95-2, Copper  
**lithium** vanadium oxide (CuLi<sub>1.8</sub>V<sub>4</sub>O<sub>11</sub>) 301358-97-4,  
**Lithium** vanadium oxide (Li<sub>1.8</sub>V<sub>4</sub>O<sub>11</sub>) 301358-99-6, Copper  
 molybdenum vanadium oxide (Cu<sub>2</sub>Mo<sub>0.2</sub>V<sub>3.8</sub>O<sub>11</sub>) 301359-02-4, Copper  
**lithium** molybdenum vanadium oxide (Cu<sub>2</sub>Li<sub>0.5</sub>Mo<sub>0.2</sub>V<sub>3.8</sub>O<sub>11</sub>)  
 RL: DEV (Device component use); USES (Uses)  
 (substituted copper vanadium oxide cathodes for secondary solid  
 electrolyte **lithium** batteries with carbonaceous anodes)

IT **301358-91-8**  
 RL: DEV (Device component use); USES (Uses)  
 (**electrolyte** solns. containing quaternary ammonium salts and  
 other salts for secondary **lithium** batteries)

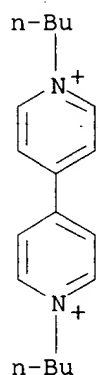
RN 301358-91-8 HCAPLUS

CN 4,4'-Bipyridinium, 1,1'-dibutyl-, bis[hexafluorophosphate(1-)] (9CI) (CA  
 INDEX NAME)

CM 1

CRN 47082-19-9

CMF C18 H26 N2

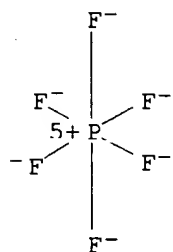


CM 2

CRN 16919-18-9

CMF F6 P

CCI CCS



L26 ANSWER 22 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2000:474501 HCAPLUS  
 DN 133:107402  
 TI Secondary **nonaqueous**-electrolyte **lithium** battery with  
 long life  
 IN Okuda, Masahisa; Hara, Kenji; Mashita, Kiyotaka  
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan; Hitachi Chemical Co., Ltd.  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M004-62; H01M004-02  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38

FAN.CNT 1

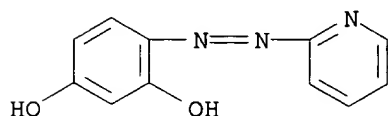
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000195553	A2	20000714	JP 1998-301813	19981023
PRAI	JP 1998-296623	A	19981019		
AB	In the title battery containing LixMnyO2 (x = 0.4-1.35; y = 0.65-1) as cathode active mass and C powder as anode active mass, the cathode and/or anode contains ≥1 additive selected from chelating agents, polyimides, chelating polymers, ion exchanger, and azole derivs for long cycle life.				
ST	<b>lithium</b> battery long cycle life; chelating agent additive active mass <b>lithium</b> battery; polyimide additive active mass <b>lithium</b> battery; ion exchanger additive active mass <b>lithium</b> battery; azole deriv additive active mass <b>lithium</b> battery				
IT	Battery electrodes Chelating agents Ion exchangers ( <b>nonaq.</b> -electrolyte <b>Li</b> battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)				
IT	Polyimides, uses RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) ( <b>nonaq.</b> -electrolyte <b>Li</b> battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)				
IT	Polyamines RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses) (polyalkylene-, chelating polymer; <b>nonaq.</b> -electrolyte				

Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)

IT 1141-59-9, 4-(2-Pyridylazo)resorcinol 25036-53-7 25038-81-7, 4,4'-Diaminodiphenyl ether-pyromellitic acid dianhydride copolymer 31070-01-6 57916-98-0, Diaion CR 20 133976-35-9, IXE 300 283584-68-9  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (nonaq.-electrolyte Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)

IT 1141-59-9, 4-(2-Pyridylazo)resorcinol  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (nonaq.-electrolyte Li battery containing chelating agent or polymer, polyimide, ion exchanger, and/or azole derivative in active mass for long cycle life)

RN 1141-59-9 HCAPLUS  
 CN 1,3-Benzenediol, 4-(2-pyridinylazo)- (9CI) (CA INDEX NAME)



L26 ANSWER 23 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2000:474496 HCAPLUS  
 DN 133:91990  
 TI Secondary **nonaqueous** electrolyte **lithium** ion battery containing chelating agent or crown ether  
 IN Okuda, Masahisa; Hara, Kenji; Mashimo, Kiyotaka  
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan; Hitachi Chemical Co., Ltd.  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M004-58  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000195548	A2	20000714	JP 1998-301814	19981023
PRAI	JP 1998-296624	A	19981019		

AB The battery has an cathode containing  $\text{Li}_x\text{Mn}_y\text{O}_2$  ( $x = 0.4-1.35$ ;  $y = 0.65-1$ ), an anode containing powdered C, and a **nonaq.** electrolyte containing a chelating agent or a crown ether forming a complex with Mn. The Mn ion dissolved from the cathode is trapped by the agent or the ether to prevent Mn deposition on the anode, so that the battery has improved cycle life at high temperature

ST chelating agent electrolyte **lithium** ion battery; crown ether electrolyte **lithium** ion battery; **lithium** ion battery electrolyte manganese trapping

IT Battery electrolytes  
 Chelating agents  
 (Li ion battery using **nonaq.** electrolyte containing



chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

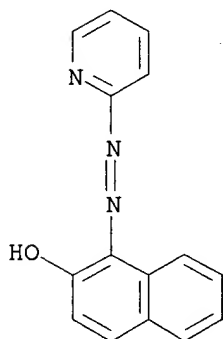
IT Crown ethers  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (Li ion battery using **nonaq.** electrolyte containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

IT Secondary batteries  
 (lithium; Li ion battery using **nonaq.** electrolyte containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

IT **85-85-8**, 1-(2-Pyridylazo)-2-naphthol 123-54-6, Acetylacetone, uses 294-93-9, 12-Crown-4-ether 17455-13-9, 18-Crown-6-ether  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (Li ion battery using **nonaq. electrolyte** containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

IT **85-85-8**, 1-(2-Pyridylazo)-2-naphthol  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (Li ion battery using **nonaq. electrolyte** containing chelating agent or crown ether for trapping Mn ion for high-temperature cycle life)

RN 85-85-8 HCAPLUS  
 CN 2-Naphthalenol, 1-(2-pyridinylazo)- (9CI) (CA INDEX NAME)

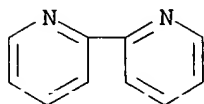


L26 ANSWER 24 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2000:378200 HCAPLUS  
 DN 132:350305  
 TI **Nonaqueous** electrolyte batteries  
 IN Maruta, Junichi  
 PA Japan Storage Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M004-58  
 ICS H01M004-02; H01M010-40; C07D213-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000156224	A2	20000606	JP 1998-327241	19981117
	FR 2786029	A1	20000519	FR 1999-14424	19991117
	CN 1254197	A	20000524	CN 1999-123891	19991117
	US 6472100	B1	20021029	US 1999-442241	19991117
PRAI	JP 1998-327241	A	19981117		
AB	The batteries use Al containing NiOOH for cathode active mass. The active mass may also contain Co, and the electrolyte for the batteries may contain a heterocyclic compound containing N atoms having unshared electron pairs, e.g., pyridine derivs.				
ST	<b>nonaq</b> battery aluminum nickel oxyhydroxide cathode; cobalt aluminum nickel oxyhydroxide battery cathode; pyridine deriv <b>nonaq</b> electrolyte nickel battery				
IT	Battery cathodes (aluminum and cobalt containing nickel oxyhydroxide cathodes for secondary <b>lithium</b> batteries)				
IT	Secondary batteries ( <b>lithium</b> ; aluminum and cobalt containing nickel oxyhydroxide cathodes and heterocyclic additive containing electrolytes for secondary <b>lithium</b> batteries)				
IT	Battery electrolytes ( <b>nonaq.</b> electrolyte solns. containing heterocyclic additives for secondary <b>lithium</b> /nickel oxyhydroxide batteries)				
IT	12026-04-9, Nickel hydroxide oxide (NiOOH) RL: DEV (Device component use); USES (Uses) (aluminum and cobalt containing nickel oxyhydroxide cathodes for secondary <b>lithium</b> batteries)				
IT	7429-90-5, Aluminum, uses 7440-48-4, Cobalt, uses RL: MOA (Modifier or additive use); USES (Uses) (aluminum and cobalt containing nickel oxyhydroxide cathodes for secondary <b>lithium</b> batteries)				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7791-03-9, <b>Lithium</b> perchlorate RL: DEV (Device component use); USES (Uses) ( <b>nonaq.</b> electrolyte solns. containing heterocyclic additives for secondary <b>lithium</b> /nickel oxyhydroxide batteries)				
IT	66-71-7, 1,10-Phenanthroline 85-02-9, Benzo[f]quinoline 91-19-0, Quinoxaline 91-22-5, Quinoline, uses 92-82-0, Phenazine 110-86-1, Pyridine, uses 119-65-3, Isoquinoline 229-87-8, Phenanthridine 230-17-1, Benzo[c]cinnoline 230-27-3, Benzo[h]quinoline 253-52-1, Phthalazine 253-66-7, Cinnoline 253-82-7, Quinazoline 254-60-4, 1,8-Naphthyridine 260-32-2, Benz[g]isoquinoline 260-36-6, Benzo[g]quinoline 260-94-6, Acridine 274-40-8, Indolizine 289-80-5, Pyridazine 290-87-9, 1,3,5-Triazine 290-96-0, 1,2,4,5-Tetrazine <b>366-18-7</b> , 2,2'-Bipyridine 25002-56-6, 4H-Quinolizine RL: MOA (Modifier or additive use); USES (Uses) ( <b>nonaq. electrolyte</b> solns. containing heterocyclic additives for secondary <b>lithium</b> /nickel oxyhydroxide batteries)				
IT	<b>366-18-7</b> , 2,2'-Bipyridine RL: MOA (Modifier or additive use); USES (Uses) ( <b>nonaq. electrolyte</b> solns. containing heterocyclic additives for secondary <b>lithium</b> /nickel oxyhydroxide batteries)				
RN	366-18-7 HCAPLUS				

CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 25 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2000:363825 HCAPLUS

DN 133:7066

TI **Non-aqueous** electrolytic solution battery

IN Shimizu, Ryuichi

PA NEC Mobile Energy K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M010-40; H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000149989	A2	20000530	JP 1999-232496	19990819
	JP 3163078	B2	20010508		
	KR 2000017619	A	20000325	KR 1999-36098	19990828
	US 6291107	B1	20010918	US 1999-385967	19990830
PRAI	JP 1998-245332	A	19980831		

OS MARPAT 133:7066

AB This **non-aqueous** electrolytic solution battery contains a **non-aqueous** electrolytic solution containing  $\geq 1$  anionic polymerizable monomers capable of forming a coating on the surface of an anode, which consists of a carbonaceous material capable of doping and dedoping Li, at the time of charging. Without affecting solubility and ion conductivity of the supporting electrolytic substance, addition of the anionic monomers to the electrolytic solution suppresses reaction between the anode and the electrolytic solution, resulting in high discharging capacity even after repeated charging and discharging cycles. The battery is useful for portable elec. appliances, e.g. cellular phones and note-type personal computers.

ST electrolytic soln anionic monomer addn battery; acrylic monomer addn electrolytic soln battery; vinyl monomer addn electrolytic soln battery

IT Carbon black, uses

RL: DEV (Device component use); USES (Uses)

(anode active mass containing; **non-aqueous** electrolytic **lithium** battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution)

IT Secondary batteries

(**lithium**; **non-aqueous** electrolytic **lithium** battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution)

IT Battery electrolytes

(**non-aqueous** electrolytic **lithium** battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution)

IT 78-79-5, Isoprene, uses 80-62-6, Methyl methacrylate 88-12-0, uses 100-42-5, Styrene, uses **100-69-6**, 2-Vinylpyridine 103-26-4, Methyl cinnamate 103-36-6, Ethyl cinnamate 123-35-3, Myrcene 140-88-5, Ethyl acrylate 141-32-2, Butyl acrylate 1072-63-5, 1-Vinylimidazole 8013-90-9, Ionone

RL: MOA (Modifier or additive use); USES (Uses)

(additive to **electrolyte; non-aqueous electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to **electrolytic** solution)

IT 39457-42-6, **Lithium** manganese oxide

RL: DEV (Device component use); USES (Uses)

(cathode active mass containing; **non-aqueous electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution)

IT 7440-44-0, Carbon, uses

RL: DEV (Device component use); USES (Uses)

(meso, graphitized, anode active mass containing; **non-aq** . electrolytic **lithium** battery with high and stable discharging capacity by addition of anionic monomer to electrolytic solution)

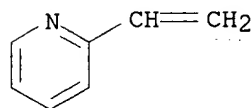
IT **100-69-6**, 2-Vinylpyridine

RL: MOA (Modifier or additive use); USES (Uses)

(additive to **electrolyte; non-aqueous electrolytic lithium** battery with high and stable discharging capacity by addition of anionic monomer to **electrolytic** solution)

RN 100-69-6 HCAPLUS

CN Pyridine, 2-ethenyl- (9CI) (CA INDEX NAME)



L26 ANSWER 26 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 2000:363824 HCAPLUS

DN 133:7065

TI **Nonaqueous** electrolyte solutions containing disulfides and secondary **lithium** batteries using them

IN Hamamoto, Shunichi; Abe, Hiroshi; Takai, Tsutomu; Matsumori, Yasuo

PA Ube Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

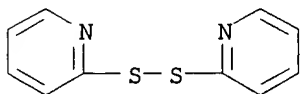
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 2000149986	A2	20000530	JP 1999-91496	19990331
PRAI	JP 1998-248975	A	19980903		
OS	MARPAT 133:7065				
AB	The electrolyte solns. contain disulfides R1SSR2 (R1, R2 = benzyl, tolyl,				

pyridyl, pyrimidyl, C1-12 alkyl, C3-6 cycloalkyl). Secondary Li batteries using the electrolyte solns. show high capacity and long cycle life.

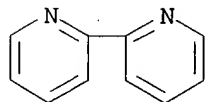
ST **lithium** battery electrolyte disulfide  
 IT Secondary batteries  
     (**lithium; nonaq.** electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)  
 IT Battery electrolytes  
     (**nonaq.** electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)  
 IT Disulfides  
     RL: DEV (Device component use); USES (Uses)  
     (**nonaq. electrolyte** solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)  
 IT 21324-40-3, **Lithium** hexafluorophosphate  
     RL: DEV (Device component use); USES (Uses)  
     (electrolyte; **nonaq.** electrolyte solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)  
 IT 96-49-1, Ethylene carbonate 103-19-5, Di(p-tolyl) disulfide 544-40-1, Dibutyl sulfide 616-38-6, Dimethyl carbonate **2127-03-9**, 2,2'-Dipyridyl disulfide  
     RL: DEV (Device component use); USES (Uses)  
     (**nonaq. electrolyte** solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)  
 IT **2127-03-9**, 2,2'-Dipyridyl disulfide  
     RL: DEV (Device component use); USES (Uses)  
     (**nonaq. electrolyte** solns. containing disulfides for secondary Li batteries with high capacity and long cycle life)  
 RN 2127-03-9 HCAPLUS  
 CN Pyridine, 2,2'-dithiobis- (9CI) (CA INDEX NAME)



L26 ANSWER 27 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1999:261931 HCAPLUS  
 DN 130:299353  
 TI Secondary **nonaqueous** electrolyte batteries  
 IN Maruta, Junichi  
 PA Japan Storage Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
     CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
     ICS H01M004-02; H01M004-52  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 11111335 A2 19990423 JP 1997-325328 19971110  
 PRAI JP 1997-227259 19970808  
 AB The batteries use NiOOH cathode active mass and an electrolyte solution containing a N heterocyclic compound having lone pair electrons on the N atom.  
 ST battery nickel hydroxide oxide cathode; electrolyte nitrogen heterocyclic compd nickel battery  
 IT Battery electrolytes  
 (electrolyte solns. containing nitrogen heterocyclic compds. for secondary **lithium** batteries with nickel hydroxide oxide cathodes)  
 IT Secondary batteries  
 (**lithium**; secondary **lithium** batteries with nickel hydroxide oxide cathodes and electrolyte solns. containing nitrogen heterocyclic compds.)  
 IT Battery cathodes  
 (secondary **lithium** batteries with nickel hydroxide oxide cathodes and electrolyte solns. containing nitrogen heterocyclic compds.)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7791-03-9, **Lithium** perchlorate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solns. containing nitrogen heterocyclic compds. for secondary **lithium** batteries with nickel hydroxide oxide cathodes)  
 IT 66-71-7, 1,10-Phenanthroline 85-02-9, Benzo[f]quinoline 91-18-9, Pteridine 91-19-0, Quinoxaline 91-22-5, Quinoline, uses 92-82-0, Phenazine 110-86-1, Pyridine, uses 119-65-3, Isoquinoline 229-87-8, Phenanthridine 230-17-1, Benzo[c]cinnoline 230-27-3, Benzo[h]quinoline 253-52-1, Phthalazine 253-66-7, Cinnoline 253-82-7, Quinazoline 254-60-4, 1,8-Naphthyridine 260-32-2, Benz[g]isoquinoline 260-36-6, Benzo[g]quinoline 260-94-6, Acridine 274-40-8, Indolizine 289-80-5, Pyridazine 289-95-2, Pyrimidine 290-37-9, Pyrazine 290-87-9, 1,3,5-Triazine 290-96-0, 1,2,4,5-Tetrazine **366-18-7**, 2,2'-Bipyridine 25002-56-6, 4H-Quinolizine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nitrogen heterocyclic compds. in **electrolyte** solns. for secondary **lithium** batteries with nickel hydroxide oxide cathodes)  
 IT 55070-72-9, Nickel hydroxide oxide  
 RL: DEV (Device component use); USES (Uses)  
 (secondary **lithium** batteries with nickel hydroxide oxide cathodes and electrolyte solns. containing nitrogen heterocyclic compds.)  
 IT **366-18-7**, 2,2'-Bipyridine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nitrogen heterocyclic compds. in **electrolyte** solns. for secondary **lithium** batteries with nickel hydroxide oxide cathodes)  
 RN 366-18-7 HCAPLUS  
 CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 28 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1998:466276 HCAPLUS  
 DN 129:83778

TI **Lithium** batteries using electrolyte solutions containing  
halogenated solvents and nitrogen compounds  
IN Kusumoto, Yasuyuki; Yoshimura, Seishi; Noma, Toshiyuki; Nishio, Akihi  
PA Sanyo Electric Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M006-16  
ICS H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10189008	A2	19980721	JP 1996-357963	19961227
PRAI	JP 1996-357963		19961227		

AB The batteries use electrolyte solns. containing halogenated solvent and N compound additives selected from pyridine, pyrazine, aniline, their derivs., alkyl nitrile, N,N-dialkyl acetamide, N-alkyl formamide, trialkylamine, and N-Me 2-pyrrolidone. The halogenated solvent is halogenated products of propylene carbonate, demethyl carbonate, THF, 1,2-dimethoxy ethane,  $\gamma$ -butyrolactone, and/or thiophene.

ST **lithium** battery halogenated electrolyte solvent; nitrogen compd  
**lithium** battery electrolyte additive

IT Battery electrolytes  
(electrolyte solns. containing halogenated solvents and nitrogen compds. for **lithium** batteries)

IT Organic compounds, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(nitrogen-containing; electrolyte solns. containing halogenated solvents and nitrogen compds. for **lithium** batteries)

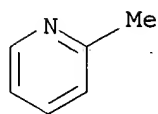
IT **Solvents**  
(**organic**, halogenated; electrolyte solns. containing halogenated solvents and nitrogen compds. for **lithium** batteries)

IT 108-32-7 112-26-5, 1,2-Bis(2-chloroethoxy)ethane 1192-30-9,  
Tetrahydrofurfuryl bromide 3003-84-7, Tetrahydrofurfuryl chloride  
5061-21-2,  $\alpha$ -Bromo- $\gamma$ -butyrolactone 5659-86-9 33454-82-9,  
**Lithium** trifluoromethanesulfonate 62146-87-6, Iodothiophene  
167951-80-6  
RL: DEV (Device component use); USES (Uses)  
(electrolyte solns. containing halogenated solvents and nitrogen compds. for **lithium** batteries)

IT 75-05-8, Acetonitrile, uses 102-69-2, Tri-n-propylamine **109-06-8**,  
2-Picoline 110-86-1, Pyridine, uses 121-44-8, uses 121-69-7,  
N,N-Dimethylaniline, uses 123-39-7, N-Methyl formamide 290-37-9,  
Pyrazine 872-50-4, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(**electrolyte** solns. containing halogenated solvents and nitrogen compds. for **lithium** batteries)

IT **109-06-8**, 2-Picoline  
RL: MOA (Modifier or additive use); USES (Uses)  
(**electrolyte** solns. containing halogenated solvents and nitrogen compds. for **lithium** batteries)

RN 109-06-8 HCAPLUS  
CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 29 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1998:410521 HCAPLUS  
 DN 129:56503  
 TI Secondary **lithium** batteries  
 IN Tsutsumi, Seiki; Horiuchi, Hiroshi; Watanabe, Isao; Miyashita, Tsutomu;  
 Akaishi, Shinobu  
 PA Fujitsu Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10172604	A2	19980626	JP 1996-323074	19961203
PRAI	JP 1996-323074		19961203		

AB The batteries use **Li** or **Li** alloy anodes, **Li** containing metal oxide cathodes, and a **nonaq. Li** salt electrolyte solution; where the electrolyte solution contains 2,2'-dithiodipyridine, its derivs., or nitrosoamine compds.

ST thiodipyridine **lithium** battery electrolyte additive; nitrosoamine additive **lithium** battery electrolyte

IT Battery electrolytes  
 (**lithium** salt electrolyte solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary **lithium** batteries)

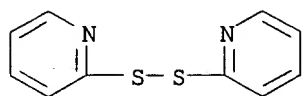
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3, **Lithium** hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (**lithium** salt electrolyte solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary **lithium** batteries)

IT 55-18-5, N-Nitroso diethylamine 2127-03-9, 2,2'-Dithiodipyridine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (**lithium** salt **electrolyte** solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary **lithium** batteries)

IT 2127-03-9, 2,2'-Dithiodipyridine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (**lithium** salt **electrolyte** solns. containing dithiodipyridine derivs. and nitrosoamine compds. for secondary **lithium** batteries)

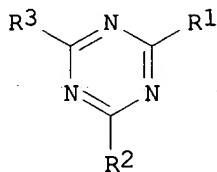
RN 2127-03-9 HCAPLUS  
 CN Pyridine, 2,2'-dithiobis- (9CI) (CA INDEX NAME)



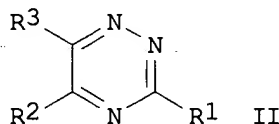


L26 ANSWER 30 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1998:135454 HCAPLUS  
 DN 128:182558  
 TI Secondary **nonaqueous** electrolyte batteries containing heterocyclic compounds  
 IN Ito, Miho  
 PA Nippondenso Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M010-40; H01M004-02  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

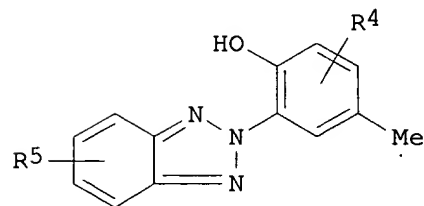
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10050344	A2	19980220	JP 1996-299547	19961022
PRAI	JP 1996-157635		19960528		
OS	MARPAT 128:182558				
GI					



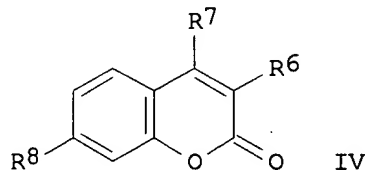
I



II



III



IV

AB The batteries use **Li** intercalating anodes and a cathodes and a **nonaq.** electrolyte containing heterocyclic compound additives selected from triazine, 2-(benzotriazol-2-yl)-p-cresol, coumarin, and their derivs. The additives are preferably I-IV, where R1, R2, R3, R4, R5 are H, Me, Et, NH2, OH, CH:CH2, 2-pyridyl, or C6H5; and R7 and R8 are H, Me, Et, NH2, OH, COOH, COMe, or CF3.

ST **lithium** battery electrolyte heterocyclic compd additive;  
 triazine deriv **lithium** battery electrolyte additive;  
 benzotriazole cresol **lithium** battery electrolyte additive;  
 coumarin deriv **lithium** battery electrolyte additive

IT Battery electrolytes  
(electrolytes containing heterocyclic compound additives for secondary lithium batteries)

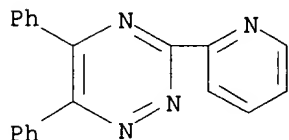
IT 96-49-1, Ethylene carbonate 110-71-4 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolytes containing heterocyclic compound additives for secondary lithium batteries)

IT 90-33-5, 4-Methylumbelliferone 91-64-5, Coumarin 108-78-1, 2,4,6-Triamino-1,3,5-triazine, uses 290-87-9, 1,3,5-Triazine 531-81-7, Coumarin-3-carboxylic acid 542-02-9 645-92-1 **1046-56-6**, 5,6-Diphenyl-3-(2-pyridyl)-1,2,4-triazine 2073-31-6 2440-22-4, 2-(2H-Benzotriazol-2-yl)-p-cresol 3194-70-5 3949-36-8, 3-Acetyl coumarin 17584-12-2, 3-Amino-5,6-dimethyl-1,2,4-triazine 53518-15-3, 7-Amino-4-(trifluoromethyl) coumarin  
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolytes containing heterocyclic compound additives for secondary lithium batteries)

IT **1046-56-6**, 5,6-Diphenyl-3-(2-pyridyl)-1,2,4-triazine  
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolytes containing heterocyclic compound additives for secondary lithium batteries)

RN 1046-56-6 HCAPLUS

CN 1,2,4-Triazine, 5,6-diphenyl-3-(2-pyridinyl)- (9CI) (CA INDEX NAME)



L26 ANSWER 31 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1997:557848 HCAPLUS

DN 127:208163

TI **Nonaqueous** electrolyte battery containing heterocyclic azo compounds

IN Kusumoto, Yasuyuki; Yamazaki, Mikiya; Yanai, Atsushi; Noma, Toshiyuki; Nishio, Koji

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M006-16  
ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09213348	A2	19970815	JP 1996-16137	19960131
PRAI	JP 1996-16137		19960131		

AB .Claimed batteries use electrolyte solns. containing 0.01-20.0 weight%  $\geq$ 1 of additives selected from 2-picoline, 3-picoline, 4-picoline, 2,4-dimethylpyridine, piperazine, pyridazine, pyrimidine, pyrazine, 1,3,5-triazine, and 1,2,4,5-tetrazine. The batteries suppress self

discharge and have good storage stability.

ST picoline additive **lithium** battery electrolyte; pyridine additive **lithium** battery electrolyte

IT Primary batteries  
(**lithium; nonaq.** electrolyte battery containing heterocyclic azo compds. for suppressing self discharge)

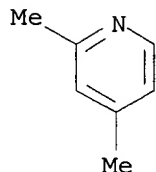
IT Battery electrolytes  
(**nonaq.** electrolyte battery containing heterocyclic azo compds. for suppressing self discharge)

IT 108-47-4, 2,4-Dimethylpyridine 108-89-4, 4-Picoline 108-99-6, 3-Picoline 109-06-8, 2-Picoline 110-85-0, Piperazine, uses 289-80-5, Pyridazine 289-95-2, Pyrimidine 290-37-9, Pyrazine 290-87-9, 1,3,5-Triazine 290-96-0, 1,2,4,5-Tetrazine  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(**nonaq. electrolyte** battery containing heterocyclic azo compds. for suppressing self discharge)

IT 108-47-4, 2,4-Dimethylpyridine 108-89-4, 4-Picoline 108-99-6, 3-Picoline 109-06-8, 2-Picoline  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(**nonaq. electrolyte** battery containing heterocyclic azo compds. for suppressing self discharge)

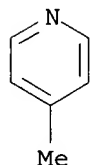
RN 108-47-4 HCAPLUS

CN Pyridine, 2,4-dimethyl- (9CI) (CA INDEX NAME)



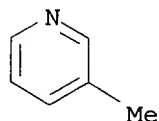
RN 108-89-4 HCAPLUS

CN Pyridine, 4-methyl- (9CI) (CA INDEX NAME)



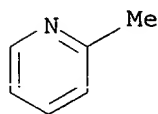
RN 108-99-6 HCAPLUS

CN Pyridine, 3-methyl- (9CI) (CA INDEX NAME)



RN 109-06-8 HCAPLUS

CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 32 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1997:501255 HCAPLUS

DN 127:178805

TI Secondary **nonaqueous**-electrolyte battery

IN Matsufuji, Akihiro; Ishizuka, Hiroshi; Negoro, Masayuki

PA Fuji Photo Film Co., Ltd., Japan

SO Eur. Pat. Appl., 20 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM H01M004-48

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 785586	A1	19970723	EP 1997-100472	19970114
	R: DE, FI, FR, GB				
	JP 09199169	A2	19970731	JP 1996-5485	19960117
	US 5759714	A	19980602	US 1997-783243	19970114
PRAI	JP 1996-5485	A	19960117		
AB	The battery comprises a cathode including a <b>Li</b> -intercalatable material; an anode comprising mainly an amorphous chalcogen compound and/or an amorphous oxide including $\geq 3$ atoms selected from Group 1, 2, 13, 14, and 15 elements; a separator; and a <b>nonaq.</b> electrolyte containing a <b>Li</b> salt and $\geq 1$ N-containing organic compound. The battery has excellent charge and discharge characteristics, and its decreases of discharge capacity due to repeated charging/discharging is small.				
ST	battery <b>lithium</b> ion <b>nonaq</b> electrolyte; electrolyte				
	battery nitrogen contg org additive				
IT	Secondary batteries				
	(high-performance <b>lithium</b> -ion)				
IT	Battery electrolytes				
	(nonaq. with nitrogen-containing organic compound additive)				
IT	193217-88-8				
	RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)				
	(anodes for <b>nonaq.</b> -electrolyte battery)				
IT	12190-79-3, Cobalt <b>lithium</b> oxide (CoLiO <sub>2</sub> )				
	RL: DEV (Device component use); USES (Uses)				
	(cathodes for <b>nonaq.</b> -electrolyte battery)				
IT	169938-66-3, Cobalt <b>lithium</b> oxide (CoLi <sub>0.2</sub> -1.2O <sub>2</sub> ) 169938-67-4, <b>Lithium</b> Nickel oxide (Li <sub>0.2</sub> -1.2NiO <sub>2</sub> ) 169938-68-5, Cobalt <b>Lithium</b> nickel oxide (Co <sub>0.1</sub> -0.9Li <sub>0.2</sub> -1.2Ni <sub>0.1</sub> -0.9O <sub>2</sub> ) 169938-71-0, <b>Lithium</b> manganese oxide (Li <sub>0.2</sub> -1.2Mn <sub>2</sub> O <sub>4</sub> ) 169938-72-1, Cobalt <b>lithium</b> manganese oxide (Co <sub>0.04</sub> -0.4Li <sub>0.2</sub> -1.2Mn <sub>1.6</sub> -1.96O <sub>4</sub> ) 169938-73-2, <b>Lithium</b> manganese nickel oxide (Li <sub>0.2</sub> -1.2Mn <sub>1.6</sub> -1.96Ni <sub>0.04</sub> -0.4O <sub>4</sub> ) 169938-74-3, <b>Lithium</b>				

manganese vanadium oxide (Li0.2-1.2Mn1.6-1.96V0.04-0.4O4) 169938-75-4,  
 Iron **lithium** manganese oxide (Fe0.04-0.4Li0.2-1.2Mn1.6-1.96O4)  
 191536-37-5, **Lithium** manganese oxide (Li0.2-1.2MnO2)  
 193955-18-9, Cobalt **lithium** vanadium oxide (Co0.8-0.9Li0.2-  
 1.2V0.1-0.2O2) 193955-19-0, Cobalt iron **lithium** oxide  
 (Co0.8-0.9Fe0.1-0.2Li0.2-1.2O2)

RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathodes for **nonaq.**-electrolyte battery)

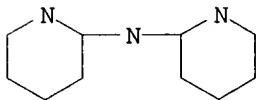
IT 66-71-7, 1,10-Phenanthroline 102-82-9, Tributylamine 122-39-4,  
 Diphenylamine, uses 280-57-9, 1,4-Diazabicyclo[2.2.2]octane  
**1202-34-2**, 2,2'-Dipyridylamine 6674-22-2 7087-68-5,  
 Diisopropylethylamine

RL: MOA (Modifier or additive use); USES (Uses)  
 (**lithium** ion **nonaq.**-**electrolyte** battery  
**electrolyte** containing)

IT **1202-34-2**, 2,2'-Dipyridylamine  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (**lithium** ion **nonaq.**-**electrolyte** battery  
**electrolyte** containing)

RN 1202-34-2 HCAPLUS

CN 2-Pyridinamine, N-2-pyridinyl- (9CI) (CA INDEX NAME)



\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

L26 ANSWER 33 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1997:394087 HCAPLUS

DN 127:37114

TI Electrolyte solutions for secondary **lithium** batteries and the  
 batteries

IN Tsutsumi, Masaki; Watanabe, Isao; Miyashita, Tsutomu; Yoshio, Masayuki;  
 Nakamura, Hirokichi

PA Fujitsu Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

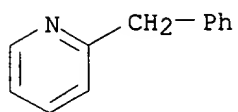
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09106833	A2	19970422	JP 1995-261681	19951009
PRAI	JP 1995-261681		19951009		

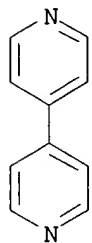
AB The electrolyte solns. contain an electrolyte, an **organic**  
**solvent**, and an additive selected from 2,4'-bipyridine,  
 4,4'-bipyridine, 4,4'-dimethyl-2,2'-bipyridine, 2-(p-tolyl)pyridine,  
 2,2'-dipyridylamine, 2,2'-dipicolylamine, 3,3'-dipicolylamine,  
 2,2'-biquinoline, 2-benzylpyridine, 3-phenylpyridine, 4-phenylpyridine,  
 2,2':6',2''-terpyridine, and 1,10-phenanthroline derivative The  
 phenanthroline derivative is a phenanthroline with 1-4 substituents selected

from halogen, Cl-3 alkyl, Ph, and OH. Li batteries using these electrolyte solns. have long cycle life.

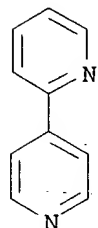
- ST **lithium** battery electrolyte additive; bipyridine deriv  
**lithium** battery electrolyte additive; pyridine deriv  
**lithium** battery electrolyte additive; phenanthroline deriv  
**lithium** battery electrolyte additive; amine deriv **lithium**  
battery electrolyte additive
- IT Amines, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(additives for electrolyte solns. for secondary **lithium**  
batteries)
- IT Battery electrolytes  
(additives for electrolyte solns. in secondary **lithium**  
batteries for cycle life)
- IT **101-82-6**, 2-Benzylpyridine 119-91-5, 2,2'-Biquinoline  
484-11-7, 2,9-Dimethyl-1,10-phenanthroline **553-26-4**,  
4,4'-Bipyridine **581-47-5**, 2,4'-Bipyridine **939-23-1**  
**1008-88-4**, 3-Phenylpyridine **1134-35-6**,  
4,4'-Dimethyl-2,2'-Bipyridine **1148-79-4**, 2,2':6',2''-Terpyridine  
**1202-34-2**, 2,2'-Dipyridylamine **1539-42-0**,  
2,2'-Dipicolylamine **1656-94-6** 1660-93-1, 3,4,7,8-Tetramethyl-  
1,10-phenanthroline 1662-01-7, 4,7-Diphenyl-1,10-phenanthroline  
2747-15-1 3002-77-5, 2-Methyl-1,10-phenanthroline 3002-78-6,  
5-Methyl-1,10-phenanthroline 3002-80-0, 3,8-Dimethyl-1,10-phenanthroline  
3002-81-1, 5,6-Dimethyl-1,10-phenanthroline 3002-82-2,  
3,4-Dimethyl-1,10-phenanthroline 3248-05-3, 4,7-Dimethyl-1,10-  
phenanthroline 3248-06-4 3309-34-0 3922-40-5, 4,7-Dihydroxy-1,10-  
phenanthroline 4199-88-6, 5-Nitro-1,10-phenanthroline 4199-89-7,  
5-Chloro-1,10-phenanthroline **4467-06-5**, 2-(p-Tolyl)-pyridine  
4733-39-5, 2,9-Dimethyl-4,7-diphenyl-1,10-phenanthroline 17044-07-4,  
1,10-Phenanthroline, 3-methyl- 31301-28-7, 4-Methyl-1,10-phenanthroline  
40000-20-2, 5-Bromo-1,10-phenanthroline 107919-97-1 107919-98-2  
108714-04-1 108714-05-2 108714-06-3 108715-43-1 190392-97-3  
190392-99-5 190393-01-2 190393-10-3 190393-12-5 190393-13-6  
190393-15-8  
RL: MOA (Modifier or additive use); USES (Uses)  
(additives for **electrolyte** solns. for secondary  
**lithium** batteries)
- IT 66-71-7, 1,10-Phenanthroline  
RL: MOA (Modifier or additive use); USES (Uses)  
(derivative; additives for electrolyte solns. for secondary **lithium**  
batteries)
- IT 110-86-1, Pyridine, uses 37275-48-2, Bipyridine  
RL: MOA (Modifier or additive use); USES (Uses)  
(derivs.; additives for electrolyte solns. for secondary  
**lithium** batteries)
- IT **101-82-6**, 2-Benzylpyridine **553-26-4**, 4,4'-Bipyridine  
**581-47-5**, 2,4'-Bipyridine **939-23-1** **1008-88-4**,  
3-Phenylpyridine **1134-35-6**, 4,4'-Dimethyl-2,2'-Bipyridine  
**1148-79-4**, 2,2':6',2''-Terpyridine **1202-34-2**,  
2,2'-Dipyridylamine **1539-42-0**, 2,2'-Dipicolylamine  
**1656-94-6** **4467-06-5**, 2-(p-Tolyl)-pyridine  
RL: MOA (Modifier or additive use); USES (Uses)  
(additives for **electrolyte** solns. for secondary  
**lithium** batteries)
- RN 101-82-6 HCAPLUS  
CN Pyridine, 2-(phenylmethyl)- (9CI) (CA INDEX NAME)



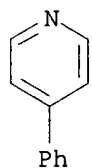
RN 553-26-4 HCAPLUS  
CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



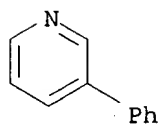
RN 581-47-5 HCAPLUS  
CN 2,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



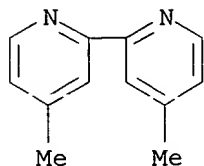
RN 939-23-1 HCAPLUS  
CN Pyridine, 4-phenyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



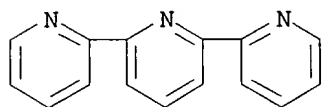
RN 1008-88-4 HCAPLUS  
CN Pyridine, 3-phenyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



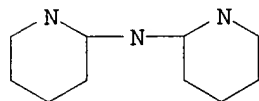
RN 1134-35-6 HCAPLUS  
CN 2,2'-Bipyridine, 4,4'-dimethyl- (9CI) (CA INDEX NAME)



RN 1148-79-4 HCAPLUS  
CN 2,2':6',2''-Terpyridine (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

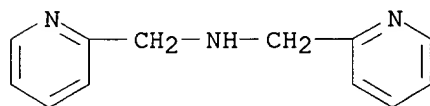


RN 1202-34-2 HCAPLUS  
CN 2-Pyridinamine, N-2-pyridinyl- (9CI) (CA INDEX NAME)

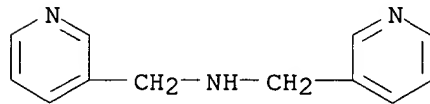


\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

RN 1539-42-0 HCAPLUS  
CN 2-Pyridinemethanamine, N-(2-pyridinylmethyl)- (9CI) (CA INDEX NAME)

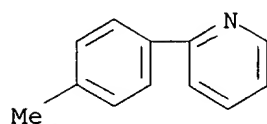


RN 1656-94-6 HCAPLUS  
CN 3-Pyridinemethanamine, N-(3-pyridinylmethyl)- (9CI) (CA INDEX NAME)



RN 4467-06-5 HCAPLUS  
CN Pyridine, 2-(4-methylphenyl)- (9CI) (CA INDEX NAME)



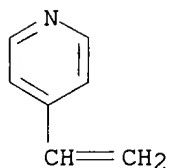


L26 ANSWER 34 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1997:321050 HCAPLUS  
 DN 127:21014  
 TI Sulfide0lithium secondary batteries and electrolytes for  
**nonaqueous** batteries  
 IN Naoi, Katsuhiko; Yamaguchi, Takitaro; Torigoe, Akihiko; Iizuka, Hiroshi  
 PA Yazaki Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM H01M004-60  
 ICS H01M004-02; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09082328	A2	19970328	JP 1995-232768	19950911
	US 5792575	A	19980811	US 1996-711853	19960910
PRAI	JP 1995-232767		19950911		
	JP 1995-232768		19950911		
AB	Title <b>Li</b> secondary batteries using sulfides as cathode active mass have strong basic polymer films on the cathodes. Title electrolytes have strong basic polymer films.. Title batteries have long cycle life and high energy d.				
ST	<b>lithium</b> battery sulfide cathode basic polymer; electrolyte strong basic polymer <b>nonaq</b> battery; film basic polymer cathode <b>lithium</b> battery				
IT	Battery cathodes Battery electrolytes ( <b>Li</b> secondary batteries with sulfide cathodes and <b>nonaq.</b> electrolytes having basic polymer films)				
IT	Sulfides, uses RL: DEV (Device component use); USES (Uses) (cathode active mass; <b>Li</b> secondary batteries with sulfide cathodes and <b>nonaq.</b> electrolytes having basic polymer films)				
IT	Secondary batteries ( <b>lithium</b> ; <b>Li</b> secondary batteries with sulfide cathodes and <b>nonaq.</b> electrolytes having basic polymer films)				
IT	<b>25232-41-1</b> , Poly(4-vinylpyridine) RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses) ( <b>Li</b> secondary batteries with sulfide cathodes and <b>nonaq.</b> electrolytes having basic polymer films)				
IT	1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole RL: DEV (Device component use); USES (Uses) (cathode active mass; <b>Li</b> secondary batteries with sulfide cathodes and <b>nonaq.</b> electrolytes having basic polymer films)				
IT	7791-03-9, <b>Lithium</b> perchlorate RL: DEV (Device component use); USES (Uses) (electrolytes; <b>Li</b> secondary batteries with sulfide cathodes				

and **nonaq.** electrolytes having basic polymer films)  
 IT **25232-41-1**, Poly(4-vinylpyridine)  
 RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)  
 (Li secondary batteries with sulfide cathodes and  
**nonaq. electrolytes** having basic polymer films)  
 RN 25232-41-1 HCAPLUS  
 CN Pyridine, 4-ethenyl-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 100-43-6  
 CMF C7 H7 N



L26 ANSWER 35 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1997:321049 HCAPLUS  
 DN 127:21013  
 TI Sulfide-lithium secondary batteries and electrolytes for  
**nonaqueous** batteries  
 IN Naoi, Katsuhiko; Yamaguchi, Takitaro; Torigoe, Akihiko; Iizuka, Hiroshi  
 PA Yazaki Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M004-60  
 ICS H01M004-02; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 37  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09082327	A2	19970328	JP 1995-232767	19950911
	US 5792575	A	19980811	US 1996-711853	19960910
PRAI	JP 1995-232767		19950911		
	JP 1995-232768		19950911		
AB	Title Li secondary batteries using sulfide cathode active mass contain strong basic polymers in the cathodes. Title electrolytes contain strong basic polymers. Title batteries have long cycle life and high energy d.				
ST	lithium battery sulfide cathode basic polymer; electrolyte strong basic polymer <b>nonaq</b> battery				
IT	Battery cathodes Battery electrolytes (Li secondary batteries with sulfide cathodes containing basic polymers and <b>nonaq.</b> battery electrolytes)				
IT	Sulfides, uses RL: DEV (Device component use); USES (Uses) (cathode active mass; Li secondary batteries with sulfide				

cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT Secondary batteries  
(**lithium**; **Li** secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT 9003-39-8, Polyvinylpyrrolidone **25232-41-1**, Poly(4-vinylpyridine)  
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)  
(**Li** secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole  
RL: DEV (Device component use); USES (Uses)  
(cathode active mass; **Li** secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT 7791-03-9, **Lithium** perchlorate  
RL: DEV (Device component use); USES (Uses)  
(electrolytes; **Li** secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

IT **25232-41-1**, Poly(4-vinylpyridine)  
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)  
(**Li** secondary batteries with sulfide cathodes containing basic polymers and **nonaq.** battery electrolytes)

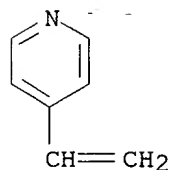
RN 25232-41-1 HCAPLUS

CN Pyridine, 4-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 100-43-6

CMF C7 H7 N



L26 ANSWER 36 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1996:38384 HCAPLUS

DN 124:121930

TI Effect of additives to the **nonaqueous** electrolyte on cycling performance of **lithium** anode for secondary **Li**-cells

AU Nakamura, Hiroyoshi; Wang, Congxiao; Mitani, Eisaku; Fuzita, Toshimi; Yoshio, Masaki

CS Fac. Sci. Eng., Saga Univ., Saga, 840, Japan

SO Hyomen Gijutsu (1995), 46(12), 1187-8  
CODEN: HYGIEX; ISSN: 0915-1869

DT Journal

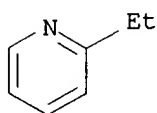
LA Japanese

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

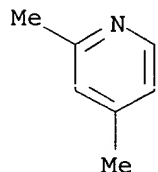
AB Charge-discharge cycling characteristics of **Li** anode for secondary **Li** batteries were examined in 1M LiPF<sub>6</sub>/(CH<sub>2</sub>)<sub>2</sub>CO<sub>3</sub>-

MeCHCH<sub>2</sub>CO<sub>3</sub>-(MeOCH<sub>2</sub>)<sub>2</sub> (4:4:1) in the presence of anilines or pyridines as an additive. The cycling lifetime was increased with the donor number of the additive up to 30 and was 3 times longer with 2-MeC<sub>5</sub>H<sub>4</sub>N or 4-Me<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>Me than that without additives. Potential measurements of anodic dissoln. and cathodic deposition of Li and a.c. impedance measurements indicated that the adsorption of 2-MeC<sub>5</sub>H<sub>4</sub>N on Li electrode surface depressed the formation of passive films to extend the cycling lifetime.

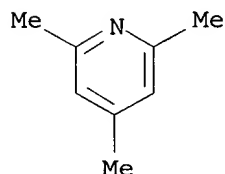
- ST **lithium** battery electrolyte additive; aniline electrolyte additive **lithium** battery; pyridine electrolyte additive **lithium** battery
- IT Battery electrolytes  
(effects of pyridine- or aniline additives to **nonaq.** electrolyte on cycling performance of **lithium** anode for **lithium** secondary batteries)
- IT Anodes  
(battery, **lithium**; effects of pyridine- or aniline additives to **nonaq.** electrolyte on cycling performance of **lithium** anode for **lithium** secondary batteries)
- IT 7439-93-2, **Lithium**, uses  
RL: DEV (Device component use); USES (Uses)  
(battery anodes; effects of pyridine- or aniline additives to **nonaq.** electrolyte on cycling performance of **lithium** anode for **lithium** secondary batteries)
- IT 95-53-4, o-Toluidine, uses 99-97-8, N,N-Dimethyl-p-toluidine 100-61-8, N-Methylaniline, uses 100-71-0, 2-Ethylpyridine 108-47-4, 2,4-Dimethylpyridine 108-75-8, 2,4,6-Trimethylpyridine 108-89-4, 4-Methylpyridine 109-06-8, 2-Methylpyridine 110-86-1, Pyridine, uses  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(effects of pyridine- or aniline additives to **nonaq.** electrolyte on cycling performance of **lithium** anode for **lithium** secondary batteries)
- IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 21324-40-3, **Lithium** hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte component; effects of pyridine- or aniline additives to **nonaq.** electrolyte on cycling performance of **lithium** anode for **lithium** secondary batteries)
- IT 100-71-0, 2-Ethylpyridine 108-47-4, 2,4-Dimethylpyridine 108-75-8, 2,4,6-Trimethylpyridine 108-89-4, 4-Methylpyridine 109-06-8, 2-Methylpyridine  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(effects of pyridine- or aniline additives to **nonaq.** electrolyte on cycling performance of **lithium** anode for **lithium** secondary batteries)
- RN 100-71-0 HCAPLUS
- CN Pyridine, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



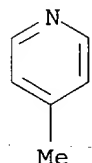
RN 108-47-4 HCAPLUS  
CN Pyridine, 2,4-dimethyl- (9CI) (CA INDEX NAME)



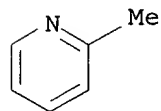
RN 108-75-8 HCAPLUS  
CN Pyridine, 2,4,6-trimethyl- (8CI, 9CI) (CA INDEX NAME)



RN 108-89-4 HCAPLUS  
CN Pyridine, 4-methyl- (9CI) (CA INDEX NAME)



RN 109-06-8 HCAPLUS  
CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 37 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
AN 1995:905695 HCAPLUS  
DN 123:318806  
TI **Nonaqueous** electrolyte solutions for secondary batteries  
IN Adachi, Momoe  
PA Sony Corp, Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07211351	A2	19950811	JP 1994-22151	19940120
PRAI	JP 1994-22151		19940120		

AB The electrolyte solns. comprise solvents, **Li** compds., and multidentate chelating agents containing  $\geq 2$  N atoms as electron pair donating elements. Preferably, the multidentate chelating agents are bidentate chelating agents (e.g., 1,10-phenanthroline, 2,2'-bipyridyl, ethylenediamine) or tridentate chelating agents (e.g., terpyridine, diethylenetriamine). Resulting batteries have good charge-discharge performance, long cycle life, and rapid-charging properties.

ST electrolyte multidentate chelating agent battery; **lithium** battery electrolyte chelating agent

IT Battery electrolytes  
Chelating agents  
(electrolyte solns. containing **Li** compds. and multidentate chelating agents for batteries for cycle life and rapid charging)

IT 66-71-7, 1,10-Phenanthroline 107-15-3, Ethylenediamine, uses 111-40-0, Diethylenetriamine **366-18-7**, 2,2'-Bipyridyl 72847-58-6, Terpyridine  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(chelating agent; **electrolyte** solns. containing **Li** compds. and multidentate chelating agents for batteries for cycle life and rapid charging)

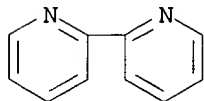
IT 21324-40-3, **Lithium** hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte; electrolyte solns. containing **Li** compds. and multidentate chelating agents for batteries for cycle life and rapid charging)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate  
RL: DEV (Device component use); USES (Uses)  
(solvent; electrolyte solns. containing **Li** compds. and multidentate chelating agents for batteries for cycle life and rapid charging)

IT **366-18-7**, 2,2'-Bipyridyl  
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
(chelating agent; **electrolyte** solns. containing **Li** compds. and multidentate chelating agents for batteries for cycle life and rapid charging)

RN 366-18-7 HCAPLUS

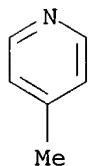
CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



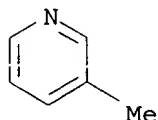
L26 ANSWER 38 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
AN 1995:643598 HCAPLUS  
DN 123:37257  
TI **Nonaqueous**-electrolyte secondary batteries

IN Suemori, Atsushi; Shoji, Yoshihiro; Yamamoto, Juji; Nishio, Koji; Saito, Toshihiko  
 PA Sanyo Electric Co, Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M004-02; H01M004-58  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

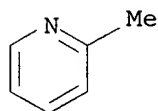
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07105977	A2	19950421	JP 1993-277708	19931008
PRAI	JP 1993-277708		19931008		
AB	The batteries use anodes of carbonaceous materials having interplanar spacing $d_{002} \leq 3.37\text{\AA}$ and a <b>nonaq.</b> electrolyte containing 0.1-1 weight% pyridine or its derivs. The pyridine additives prevent decomposition of the electrolytes on the anode surfaces and the batteries have long cycle life.				
ST	<b>lithium</b> battery electrolyte pyridine additive; picoline additive				
IT	<b>lithium</b> battery electrolyte				
IT	Battery electrolytes (secondary <b>lithium</b> batteries with carbonaceous anodes and <b>nonaq.</b> electrolytes containing pyridine derivative)				
IT	Carbonaceous materials RL: DEV (Device component use); USES (Uses) (secondary <b>lithium</b> batteries with carbonaceous anodes and <b>nonaq.</b> electrolytes containing pyridine derivative)				
IT	21324-40-3, <b>Lithium</b> hexafluorophosphate (LiPF <sub>6</sub> ) RL: DEV (Device component use); USES (Uses) (secondary <b>lithium</b> batteries with carbonaceous anodes and <b>nonaq.</b> electrolytes containing pyridine derivative)				
IT	<b>108-89-4</b> , $\gamma$ -Picoline <b>108-99-6</b> , $\beta$ -Picoline <b>109-06-8</b> , $\alpha$ -Picoline 110-86-1, Pyridine, uses RL: MOA (Modifier or additive use); USES (Uses) (secondary <b>lithium</b> batteries with carbonaceous anodes and <b>nonaq. electrolytes</b> containing pyridine derivative)				
IT	7782-42-5, Graphite, uses RL: DEV (Device component use); USES (Uses) (secondary <b>lithium</b> batteries with graphite anodes and <b>nonaq.</b> electrolytes containing pyridine derivative)				
IT	<b>108-89-4</b> , $\gamma$ -Picoline <b>108-99-6</b> , $\beta$ -Picoline <b>109-06-8</b> , $\alpha$ -Picoline RL: MOA (Modifier or additive use); USES (Uses) (secondary <b>lithium</b> batteries with carbonaceous anodes and <b>nonaq. electrolytes</b> containing pyridine derivative)				
RN	108-89-4 HCAPLUS				
CN	Pyridine, 4-methyl- (9CI) (CA INDEX NAME)				



RN 108-99-6 HCAPLUS  
 CN Pyridine, 3-methyl- (9CI) (CA INDEX NAME)



RN 109-06-8 HCAPLUS  
 CN Pyridine, 2-methyl- (9CI) (CA INDEX NAME)



L26 ANSWER 39 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1995:546901 HCAPLUS  
 DN 122:270113  
 TI Gelled electrolyte for photoelectrochemical systems, its synthesis and application  
 IN Quinten, Werner; Crummenauer, Klaus  
 PA Germany  
 SO Ger. Offen., 4 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 IC ICM H01L051-00  
 ICS H01G009-20; B05D001-00; H01M006-14; H01M006-22  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 4327114	A1	19950330	DE 1993-4327114	19930812
PRAI	DE 1993-4327114		19930812		

AB The electrolyte comprises **organic solvents**, salts 0.05-2.0, reducers 0.001-0.5 mol/L, H<sub>2</sub>O 0.005-2.0 weight%, and gel-building components 0.001-50 mol%. The solvents include alcs., ketones, ethylene carbonate, propylene carbonate, MeCN, ether, and THF; the salts include Li, Na, K, NH<sub>4</sub>, and quaternary ammonium salts; the reducers include Br, I, quinone, hydroquinone, and Me viologen; and the gel-building components include PEO, polypropylene oxide, polyethylene glycols, etc.

ST electrolyte gelled photoelectrochem system

IT Alcohols, uses  
 Ketones, uses  
 Quaternary ammonium compounds, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (gelled electrolyte for photoelectrochem. systems containing)

IT Alcohols, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (metal salts, gelled electrolyte for photoelectrochem. systems containing)



IT Photoelectric devices, solar  
 (photoelectrochem., gelled electrolyte for)

IT 60-29-7, Ether, uses 75-05-8, Acetonitrile, uses 96-49-1, Ethylene carbonate 106-51-4, Quinone, uses 108-32-7, Propylene carbonate 109-99-9, THF, uses 123-31-9, Hydroquinone, uses 1910-42-5, Methyl viologen 7439-93-2D, **Lithium**, salts 7440-09-7D, Potassium, salts 7440-23-5D, Sodium, salts 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses 14798-03-9D, Ammonium, salts 25322-68-3, PEO 25322-69-4, Polypropylene oxide

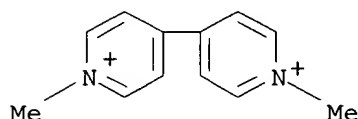
RL: TEM (Technical or engineered material use); USES (Uses)  
 (gelled **electrolyte** for photoelectrochem. systems containing)

IT 1910-42-5, Methyl viologen

RL: TEM (Technical or engineered material use); USES (Uses)  
 (gelled **electrolyte** for photoelectrochem. systems containing)

RN 1910-42-5 HCAPLUS

CN 4,4'-Bipyridinium, 1,1'-dimethyl-, dichloride (8CI, 9CI) (CA INDEX NAME)



●2 Cl<sup>-</sup>

L26 ANSWER 40 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1994:522336 HCAPLUS

DN 121:122336

TI Conductivities of 1:1 salts in 2-cyanopyridine

AU Hefter, G. T.; Salomon, M.

CS Power, Sources Div., U.S. Army EPSC, Fort Monmouth, NJ, 07703-5601, USA

SO Journal of Solution Chemistry (1994), 23(5), 579-93  
 CODEN: JSLCAG; ISSN: 0095-9782

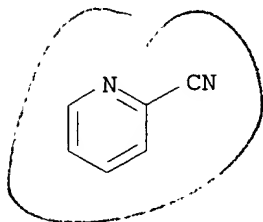
DT Journal

LA English

CC 76-1 (Electric Phenomena)  
 Section cross-reference(s): 68

AB Electrolytic conductivities of eight simple 1:1 electrolytes have been measured in dilute solns. of 2-cyanopyridine (2CNP) at 30°. Infinite dilution mobilities and association consts. were calculated using the Fuoss-Hsia equation. With the exception of LiCF<sub>3</sub>SO<sub>3</sub>, all salts show very little association, consistent with the very high dielec. constant of 2CNP. The weak association which does occur is attributed to weak ion-solvent interactions. No evidence was found for triple ion formation. Conductivities of concentrated solns. of LiAsF<sub>6</sub> in 2CNP increase slowly with concentration reaching a maximum at a concentration of around 0.65 mol-dm<sup>-3</sup>. These conductances are slightly lower than those in propylene carbonate which has a lower dielec. constant and a higher viscosity. Conductivities of concentrated LiAsF<sub>6</sub> solns. in 2CNP mixts. with acetonitrile vary monotonically, consistent with solution viscosities, and show no sign of the maximum commonly observed in mixed **organic solvents**.

ST electrolytic cond salt cyanopyridine  
 IT Electric conductivity and conduction  
 (of simple 1:1 salts in 2-cyanopyridine)  
 IT **100-70-9**, 2-Cyanopyridine  
 RL: PRP (Properties)  
 (elec. conductivity of simple 1:1 **electrolytes** in)  
 IT 311-28-4, Tetrabutylammonium iodide 631-40-3, Tetrapropylammonium iodide  
 7601-89-0, Sodium perchlorate 29935-35-1, **Lithium**  
 hexafluoroarsenate 33454-82-9, **Lithium**  
 trifluoromethanesulfonate 41524-04-3, Cesium trifluoromethanesulfonate  
 73491-35-7, Rubidium trifluoromethanesulfonate 90076-65-6  
 RL: PRP (Properties)  
 (electrolytic conductivity of, in 2-cyanopyridine)  
 IT **100-70-9**, 2-Cyanopyridine  
 RL: PRP (Properties)  
 (elec. conductivity of simple 1:1 **electrolytes** in)  
 RN 100-70-9 HCAPLUS  
 CN 2-Pyridinecarbonitrile (9CI) (CA INDEX NAME)

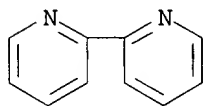


L26 ANSWER 41 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1994:249321 HCAPLUS  
 DN 120:249321  
 TI **Nonaqueous** electrolyte batteries with improved solvents  
 IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshita, Ryuji;  
 Suemori, Atsushi; Furukawa, Saneshiro; Nishio, Koji  
 PA Sanyo Electric Co, Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M006-16  
 ICS H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05343076	A2	19931224	JP 1992-171674	19920604
PRAI	JP 1992-171674		19920604		

AB **Li** batteries use electrolyte solvents containing bathophenanthroline and/or 2,2'-dipyridyl. These solvents are resistant to **Li**<sup>+</sup> induced decomposition and render the batteries long cycle life.  
 ST bathophenanthroline electrolyte solvent **lithium** battery;  
 dipyridyl electrolyte solvent **lithium** battery  
 IT Battery electrolytes  
 (**lithium** salt, solvent mixts. containing bathophenanthroline and/or 2,2'-dipyridyl for)  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4,  
 1,2-Dimethoxyethane 4437-85-8, 1,2-Butylene carbonate  
 RL: USES (Uses)  
 (electrolyte solvents containing bathophenanthroline and/or 2,2'-dipyridyl)

and, for **lithium** batteries)  
 IT 21324-40-3, **Lithium** hexafluorophosphate 33454-82-9  
 RL: USES (Uses)  
 (electrolyte solvents containing bathophenanthroline and/or 2,2'-dipyridyl  
 for, in **lithium** batteries)  
 IT **366-18-7**, 2,2'-Dipyridyl 1662-01-7, Bathophenanthroline  
 RL: USES (Uses)  
 (**electrolyte** solvents containing, for **lithium**  
 batteries)  
 IT **366-18-7**, 2,2'-Dipyridyl  
 RL: USES (Uses)  
 (**electrolyte** solvents containing, for **lithium**  
 batteries)  
 RN 366-18-7 HCAPLUS  
 CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



L26 ANSWER 42 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1993:216583 HCAPLUS  
 DN 118:216583  
 TI **Nonaqueous**-electrolyte **lithium** batteries  
 IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Oshita, Ryuji;  
 Furukawa, Saneshiro  
 PA Sanyo Electric Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04337258	A2	19921125	JP 1991-110421	19910515
	JP 2999847	B2	20000117		
PRAI	JP 1991-110421		19910515		

AB The electrolytes contain  $\geq 1$  bipyridine (derivs.). Preferably, the  
 electrolytes contain LiCF<sub>3</sub>SO<sub>3</sub>; LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiAsF<sub>6</sub>, or LiSbF<sub>6</sub> as solute.  
 The electrolytes are oxidation resistant, and the batteries have good  
 property in storing and charge-discharge cycling.  
 ST **lithium** battery electrolyte bipyridine  
 IT Battery electrolytes  
 (**lithium** salt, bipyridine derivs. in, for oxidn resistance)  
 IT 14283-07-9, **Lithium** tetrafluoroborate (LiBF<sub>4</sub> 18424-17-4  
 21324-40-3, **Lithium** hexafluorophosphate (LiPF<sub>6</sub>) 29935-35-1,  
**Lithium** hexafluoroarsenate (LiAsF<sub>6</sub>) 33454-82-9,  
 Trifluoromethanesulfonic acid **lithium** salt  
 RL: USES (Uses)  
 (electrolytes containing, bipyridine derivs. in, for secondary  
**lithium** batteries)  
 IT **366-18-7**, 2,2'-Bipyridine **553-26-4**, 4,4'-Bipyridine

1983-60-4 37275-48-2, Bipyridine

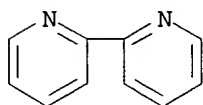
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolytes containing, for secondary lithium  
batteries)

IT 366-18-7, 2,2'-Bipyridine 553-26-4, 4,4'-Bipyridine  
1983-60-4

RL: MOA (Modifier or additive use); USES (Uses)  
(electrolytes containing, for secondary lithium  
batteries)

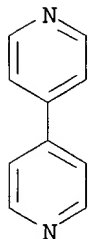
RN 366-18-7 HCAPLUS

CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



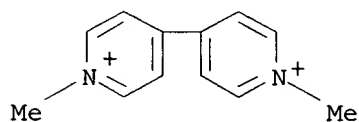
RN 553-26-4 HCAPLUS

CN 4,4'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



RN 1983-60-4 HCAPLUS

CN 4,4'-Bipyridinium, 1,1'-dimethyl-, diiodide (8CI, 9CI) (CA INDEX NAME)



● 2 I<sup>-</sup>

L26 ANSWER 43 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN

AN 1992:554593 HCAPLUS

DN 117:154593

TI **Nonaqueous** electrolyte secondary **lithium** batteries

IN Ooshita, Ryuji; Watanabe, Hiroshi; Yoshimura, Seiji; Furukawa, Sanehiro

PA Sanyo Electric Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04160766	A2	19920604	JP 1990-284631	19901022
	JP 2940706	B2	19990825		
PRAI	JP 1990-284631		19901022		

AB The battery electrolytes contain **organic solvents**, solutes, and triflates having substituents containing conjugated groups. Preferably, the triflates are N-fluoropyridinium triflate (derivs.) and/or benzene triflate (derivs.). **Li** dendrite generation is prevented in the batteries.

ST **lithium** battery electrolyte additive triflate; pyridinium triflate **lithium** battery electrolyte; benzene triflate **lithium** battery electrolyte

IT Battery electrolytes  
 (containing triflate compds., for dendrite growth prevention)

IT 107263-95-6, N-Fluoropyridinium triflate **107264-00-6**,  
 N-Fluoro-2,4,6-trimethylpyridinium triflate **107264-06-2**,  
 N-Fluoro-3,5-dichloropyridinium triflate

RL: USES (Uses)

(battery **electrolytes** containing, **lithium** secondary,  
 for dendrite growth prevention)

IT 17763-67-6 29935-35-1, **Lithium** hexafluoroarsenate (LiAsF6)

RL: USES (Uses)

(battery electrolytes containing, **lithium** secondary, with  
 dendrite prevention)

IT **107264-00-6**, N-Fluoro-2,4,6-trimethylpyridinium triflate  
**107264-06-2**, N-Fluoro-3,5-dichloropyridinium triflate

RL: USES (Uses)

(battery **electrolytes** containing, **lithium** secondary,  
 for dendrite growth prevention)

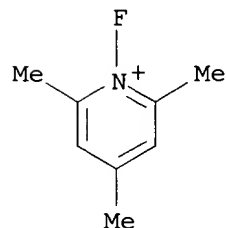
RN 107264-00-6 HCAPLUS

CN Pyridinium, 1-fluoro-2,4,6-trimethyl-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

CM 1

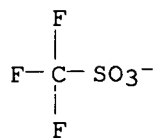
CRN 107263-99-0

CMF C8 H11 F N



CM 2

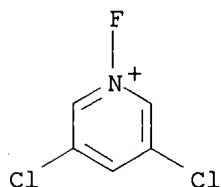
CRN 37181-39-8  
CMF C F3 O3 S



RN 107264-06-2 HCAPLUS  
CN Pyridinium, 3,5-dichloro-1-fluoro-, salt with trifluoromethanesulfonic acid (1:1) (9CI) (CA INDEX NAME)

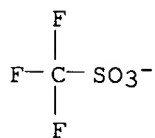
CM 1

CRN 107264-05-1  
CMF C5 H3 Cl2 F N



CM 2

CRN 37181-39-8  
CMF C F3 O3 S



L26 ANSWER 44 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
AN 1985:512237 HCAPLUS  
DN 103:112237  
TI Sheetlike battery  
PA Seiko Instruments and Electronics, Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M006-12  
CC 72-3 (Electrochemistry)  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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 PI JP 60032252 A2 19850219 JP 1983-141582 19830802  
 PRAI JP 1983-141582 19830802  
 AB A sheetlike battery is described, which consists of thin-layer or sheetlike cathode and anode active materials (e.g., Zn and MnO<sub>2</sub>) and sheetlike cathode and anode collectors. The battery is provided with  $\geq 1$  portions spot adhered in the thickness direction at the central region of the battery to decrease the internal resistance and improve the storage property. Optionally, the spot-adhered portions may be prepared by heat sealing.  
 ST zinc manganese oxide battery; sheet like battery  
 IT Batteries, primary  
 (sheet-like)  
 IT 7440-43-9, uses and miscellaneous 7440-66-6, uses and miscellaneous  
 RL: USES (Uses)  
 (anode, in sheet-like battery)  
 IT 7429-90-5, uses and miscellaneous 7440-23-5, uses and miscellaneous  
 RL: USES (Uses)  
 (anode, in sheet-like battery with organic electrolyte)  
 IT 7439-93-2, uses and miscellaneous  
 RL: USES (Uses)  
 (anode, in sheet-like organic electrolyte or solid electrolyte battery)  
 IT 7440-22-4, uses and miscellaneous  
 RL: USES (Uses)  
 (anode, in sheet-like solid electrolyte battery)  
 IT 1313-13-9, uses and miscellaneous 7782-44-7, uses and miscellaneous  
 RL: USES (Uses)  
 (cathode, in sheet-like battery with cadmium or zinc)  
 IT 1301-96-8 12026-04-9 20667-12-3  
 RL: PRP (Properties)  
 (cathode, in sheet-like battery with cadmium or zinc)  
 IT 1314-62-1, uses and miscellaneous 1317-38-0, uses and miscellaneous  
 1317-40-4  
 RL: USES (Uses)  
 (cathode, in sheet-like organic electrolyte battery)  
 IT 7784-01-2 11113-63-6 11126-12-8 12356-42-2  
 RL: PRP (Properties)  
 (cathode, in sheet-like organic electrolyte battery)  
 IT 7704-34-9, uses and miscellaneous  
 RL: USES (Uses)  
 (cathode, in sheet-like solid electrolyte battery with silver or lithium)  
 IT 874-81-7 12039-13-3 12298-69-0 34503-47-4  
 RL: PRP (Properties)  
 (cathode, in sheet-like solid electrolyte battery with silver or lithium)  
 IT 7790-29-6  
 RL: PRP (Properties)  
 (cathode, with lead sulfide in sheet-like solid electrolyte battery with silver or lithium)  
 IT 1314-87-0  
 RL: PRP (Properties)  
 (cathode, with rubidium iodide in sheet-like solid electrolyte battery with lithium or silver)  
 IT 1310-58-3, uses and miscellaneous 1310-73-2, uses and miscellaneous  
 7646-85-7, uses and miscellaneous  
 RL: USES (Uses)  
 (electrolyte containing, for zinc or cadmium sheet-like battery)

IT 7791-03-9 14283-07-9 29935-35-1  
 RL: PRP (Properties)  
 (electrolyte, in **organic solvent** for sheet-like battery)

IT 26134-62-3  
 RL: PRP (Properties)  
 (electrolyte, with and without **lithium** iodide and **lithium** hydroxide, for sheet-like battery with **lithium** or silver)

IT 10377-51-2  
 RL: PRP (Properties)  
 (solid electrolyte containing, for sheet-like battery with silver or **lithium**)

IT 1310-65-2  
 RL: PRP (Properties)  
 (solid electrolyte from **lithium** iodide and **lithium** nitrate and, for sheet-like **lithium** or silver battery)

IT 1344-28-1, uses and miscellaneous  
 RL: USES (Uses)  
 (solid electrolyte from **lithium** iodide containing, for sheet-like battery with silver or **lithium**)

IT 7550-35-8 10377-51-2 12267-44-6 37220-89-6  
 RL: PRP (Properties)  
 (solid electrolyte, in sheet-like battery with silver or **lithium**)

IT **34503-47-4**  
 RL: PRP (Properties)  
 (cathode, in sheet-like solid **electrolyte** battery with silver or **lithium**)

RN 34503-47-4 HCAPLUS  
 CN Pyridine, 2-ethenyl-, homopolymer, compd. with iodine (9CI) (CA INDEX NAME)

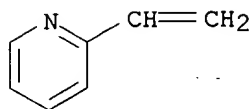
CM 1  
 CRN 7553-56-2  
 CMF I2

I-I

CM 2  
 CRN 25014-15-7  
 CMF (C7 H7 N)x  
 CCI PMS

CM 3  
 CRN 100-69-6  
 CMF C7 H7 N





L26 ANSWER 45 OF 45 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 1985:425001 HCAPLUS  
 DN 103:25001  
 TI Organic-electrolyte battery  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M006-16  
 ICS H01M004-36  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 60035461	A2	19850223	JP 1983-143036	19830803
PRAI	JP 1983-143036		19830803		

AB A **nonaq.** battery has a metal oxide or sulfide cathode, a light-metal anode, and an organic electrolyte; a chelating agent that chelates with the metal in the cathode is contained in or mixed with the electrolyte or the cathode. This prevents deposition of metals on anode, and thus increases the storage life of the battery. Thus, the cathode was prepared by press forming a mixture containing purified natural FeS<sub>2</sub> (95% purity) 100, acetylene black 5, and PTFE 5 parts on Ni mesh. Anode was press formed **Li** on Ni mesh. The electrolyte was M LiClO<sub>4</sub> in 1:1 propylene carbonate-MeOCH<sub>2</sub>CH<sub>2</sub>OMe and contained 0.2% phenanthroline [66-71-7]. After storage at 60° for 6 mo, the battery showed only minimal drop of initial voltage. Mixing 2% phenanthroline with cathode material had similar effect.

ST battery **nonaq** electrolyte chelating agent; cathode **nonaq** battery chelating agent; phenanthroline **nonaq** battery electrolyte; **lithium** iron sulfide phenanthroline battery

IT Batteries, primary  
 (**lithium**-iron sulfide, with electrolyte containing chelating agent)

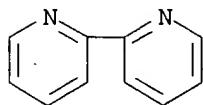
IT Cathodes  
 (battery, iron sulfide, containing chelating agent)

IT 66-71-7 **366-18-7**  
 RL: USES (Uses)  
 (cathodes or **electrolyte** containing, iron sulfide, battery)

IT 1317-40-4 12068-85-8  
 RL: USES (Uses)  
 (cathodes, containing chelating agent, battery)

IT **366-18-7**  
 RL: USES (Uses)  
 (cathodes or **electrolyte** containing, iron sulfide, battery)

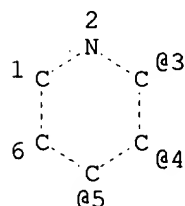
RN 366-18-7 HCAPLUS  
 CN 2,2'-Bipyridine (8CI, 9CI) (CA INDEX NAME)



=> => D QUE

L3

STR



A @7

VPA 7-3/4/5 U

NODE ATTRIBUTES:

NSPEC IS RC AT 7

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L14	36196	SEA FILE=HCAPLUS ABB=ON	BATTER? (L) ELECTROLYT?
L15		SEL L14 1- RN :	36335 TERMS
L16	36311	SEA FILE=REGISTRY ABB=ON	L15
L18	379	SEA FILE=REGISTRY SUB=L16	SSS FUL L3
L19	79379	SEA FILE=HCAPLUS ABB=ON	L18
L20	79379	SEA FILE=HCAPLUS ABB=ON	L19 AND L16
L21	407	SEA FILE=HCAPLUS ABB=ON	L19 (L) ELECTROLYT?
L22	407	SEA FILE=HCAPLUS ABB=ON	L20 AND L21
L23	131	SEA FILE=HCAPLUS ABB=ON	L21 AND (LI OR LITHIUM)
L24	38	SEA FILE=HCAPLUS ABB=ON	L23 AND (NON(W)AQUEOUS OR NONAQUEOUS)
L25	9	SEA FILE=HCAPLUS ABB=ON	L23 AND ORG? (2A) SOLVENT#
L26	45	SEA FILE=HCAPLUS ABB=ON	L24 OR L25
L28	21390	SEA FILE=REGISTRY ABB=ON	LITHIUM AND SALT
L29	67527	SEA FILE=HCAPLUS ABB=ON	L28
L30	56	SEA FILE=HCAPLUS ABB=ON	L22 AND L29
L31	22	SEA FILE=HCAPLUS ABB=ON	L30 AND (NONAQ? OR NON(W)AQUEOUS OR ORG? (2A) SOLVENT#)
L32	1	SEA FILE=HCAPLUS ABB=ON	(L26 OR L31) NOT L26

=&gt; D ALL L32 HITSTR

L32 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2002:773877 HCAPLUS  
 DN 137:313487  
 TI Polysiloxane salt, electrolyte composition, battery, secondary  
**nonaqueous** battery, and photoelectrochemical cell  
 IN Ono, Michio; Sen, Masakazu  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 34 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M010-40; C08G077-392; H01B001-06; H01M014-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002298913	A2	20021011	JP 2001-97652	20010329
PRAI	JP 2001-97652		20010329		
OS	MARPAT 137:313487				

AB The electrolyte contains a polysiloxane salt, having a Group I or Group II metal cation or an organic cation and an anion containing a  $-(\text{SiR}_1\text{R}_2\text{O})_n-$  (R1 and

R2 = alkyl, aryl, and alkoxy groups, n = integer  $\geq 3$ ) group and a H+ dissociating sulfonamide, sulfonimide, N-acylsulfonamide, alc., phenol, or sulfonic acid. The salt is  $\text{R}_3(\text{SiR}_1\text{R}_2\text{O})_n\text{SiR}_1\text{R}_2\text{L}_1\text{Y}_1\text{X}_1$  or  $\text{X}_2\text{Y}_2\text{L}_2(\text{SiR}_1\text{R}_2\text{O})_n\text{SiR}_1\text{R}_2\text{L}_1\text{X}_1$ , where R3 = (substituted) alkyl group, X1 and X2 = cations, L1 and L2 = bivalent connection groups including alkylene groups, Y1 and Y2 = anion group containing substituents. Secondary **nonaq.** batteries and photoelectrochem. cells use the electrolyte.

ST secondary battery **nonaq** polysiloxane electrolyte compn;  
 photoelectrochem cell **nonaq** polysiloxane electrolyte compn

IT Battery electrolytes

Photoelectrochemical cells

(compns. of polysiloxane salt electrolytes for secondary **nonaq**  
 . batteries and photoelectrochem. cells)

IT 7553-56-2, Iodine, uses 65039-05-6 470709-30-9  
 470709-33-2 470709-35-4 470709-38-7  
 470709-40-1 470709-42-3 470709-44-5  
 470709-46-7

RL: DEV (Device component use); USES (Uses)

(compns. of polysiloxane salt **electrolytes** for secondary  
**nonaq.** batteries and photoelectrochem. cells)

IT 7553-56-2, Iodine, uses 65039-05-6 470709-30-9  
 470709-33-2 470709-35-4 470709-38-7  
 470709-40-1 470709-42-3 470709-44-5  
 470709-46-7

RL: DEV (Device component use); USES (Uses)

(compns. of polysiloxane salt **electrolytes** for secondary  
**nonaq.** batteries and photoelectrochem. cells)

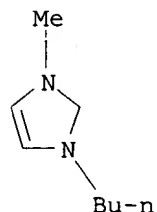
RN 7553-56-2 HCAPLUS

CN Iodine (8CI, 9CI) (CA INDEX NAME)

I-I

RN 65039-05-6 HCAPLUS

CN 1H-Imidazolium, 1-butyl-3-methyl-, iodide (9CI) (CA INDEX NAME)

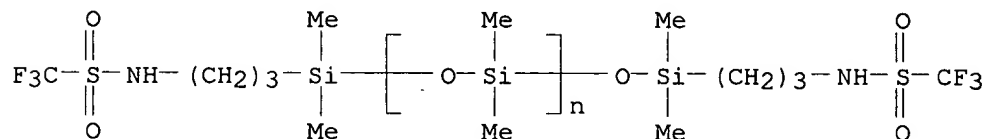


● I<sup>-</sup>

\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

RN 470709-30-9 HCAPLUS

CN Poly[oxy(dimethylsilylene)], α-[dimethyl[3-  
[[ (trifluoromethyl)sulfonyl]amino]propyl]silyl]-ω-[[dimethyl[3-  
[[ (trifluoromethyl)sulfonyl]amino]propyl]silyl]oxy]-, dilithium salt (9CI)  
(CA INDEX NAME)



●2 Li

RN 470709-33-2 HCAPLUS

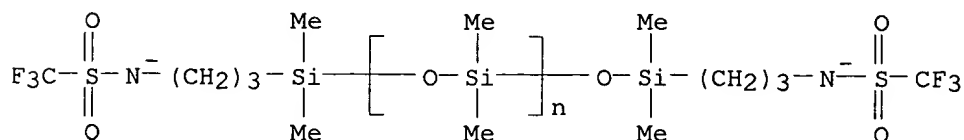
CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with α-[dimethyl[3-  
[[ (trifluoromethyl)sulfonyl]amino]propyl]silyl]-ω-[[dimethyl[3-  
[[ (trifluoromethyl)sulfonyl]amino]propyl]silyl]oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

CM 1

CRN 470709-32-1

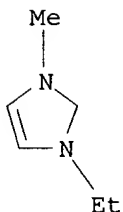
CMF (C2 H6 O Si)n C12 H24 F6 N2 O5 S2 Si2

CCI PMS



CM 2

CRN 65039-03-4  
CMF C6 H11 N2



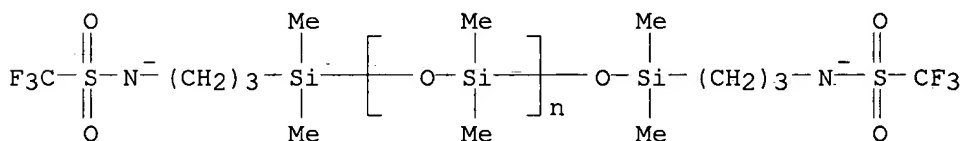
\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

RN 470709-35-4 HCAPLUS

CN Pyridinium, 4-(1,1-dimethylethyl)-1-methyl-, salt with  
 $\alpha$ -[dimethyl[3-[[[(trifluoromethyl)sulfonyl]amino]propyl]silyl]-  
 $\omega$ -[[dimethyl[3-[[[(trifluoromethyl)sulfonyl]amino]propyl]silyl]oxy]Po  
ly[oxy(dimethylsilylene)]] (2:1) (9CI) (CA INDEX NAME)

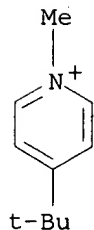
CM 1

CRN 470709-32-1  
CMF (C2 H6 O Si)<sub>n</sub> C12 H24 F6 N2 O5 S2 Si2  
CCI PMS



CM 2

CRN 33255-76-4  
CMF C10 H16 N



RN 470709-38-7 HCAPLUS

CN Ethanaminium, N,N,N-triethyl-2-methoxy-, salt with  $\alpha$ -[dimethyl[3-[2-  
[[[(trifluoromethyl)sulfonyl]amino]ethoxy]propyl]silyl]- $\omega$ -

[[dimethyl[3-[2-[[trifluoromethyl)sulfonyl]amino]ethoxy]propyl]silyl]oxy]  
poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

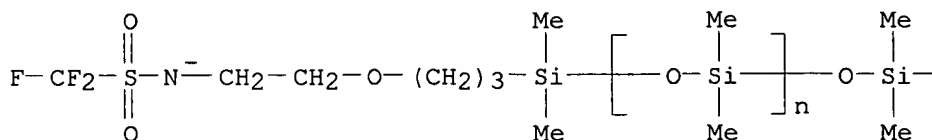
CM 1

CRN 470709-37-6

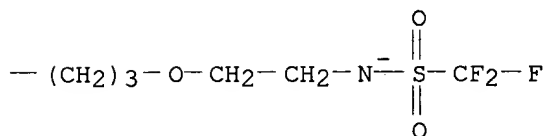
CMF (C2 H6 O Si)<sub>n</sub> C16 H32 F6 N2 O7 S2 Si2

CCI PMS

PAGE 1-A



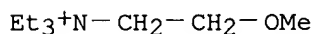
PAGE 1-B



CM 2

CRN 464927-73-9

CMF C9 H22 N O



RN 470709-40-1 HCAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with  $\alpha$ -(8,8,8-trifluoro-1,1-dimethyl-5,5,7,7-tetraoxido-5,7-dithia-6-aza-1-sila-oct-1-yl)- $\omega$ -[(8,8,8-trifluoro-1,1-dimethyl-5,5,7,7-tetraoxido-5,7-dithia-6-aza-1-sila-oct-1-yl)oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI) (CA INDEX NAME)

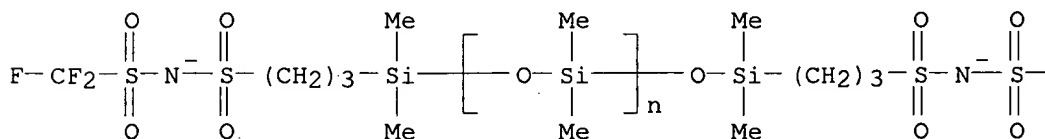
CM 1

CRN 470709-39-8

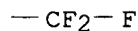
CMF (C2 H6 O Si)<sub>n</sub> C12 H24 F6 N2 O9 S4 Si2

CCI PMS

PAGE 1-A



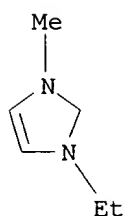
PAGE 1-B



CM 2

CRN 65039-03-4

CMF C6 H11 N2



\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

RN 470709-42-3 HCAPLUS

CN 1H-Imidazolium, 1,3-dimethyl-, salt with  $\alpha$ -(11,11,11-trifluoro-1,1-dimethyl-3,3,10,10-tetraoxido-5-oxa-8,10-dithia-9-aza-1-silaundec-1-yl)- $\omega$ -[(11,11,11-trifluoro-1,1-dimethyl-3,3,10,10-tetraoxido-5-oxa-8,10-dithia-9-aza-1-silaundec-1-yl)oxy]poly[oxy(dimethylsilylene)] (2:1) (9CI)  
(CA INDEX NAME)

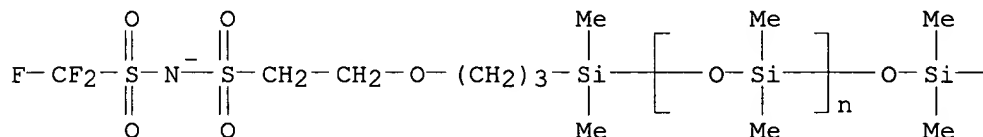
CM 1

CRN 470709-41-2

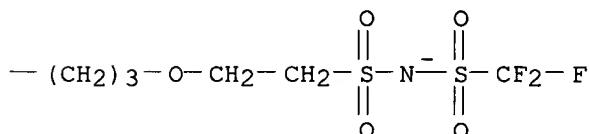
CMF (C2 H6 O Si)<sub>n</sub> C16 H32 F6 N2 O11 S4 Si2

CCI PMS

PAGE 1-A



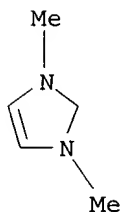
PAGE 1-B



CM 2

CRN 45470-32-4

CMF C5 H9 N2



\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

RN 470709-44-5 HCAPLUS

CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with  $\alpha$ -[(3-ethoxypropyl)dimethylsilyl]- $\omega$ -[(15,15,15-trifluoro-1,1-dimethyl-14,14-dioxido-12-oxo-5,8-dioxa-14-thia-13-aza-1-silapentadec-1-yl)oxy]poly[oxy(dimethylsilylene)] (1:1) (9CI) (CA INDEX NAME)

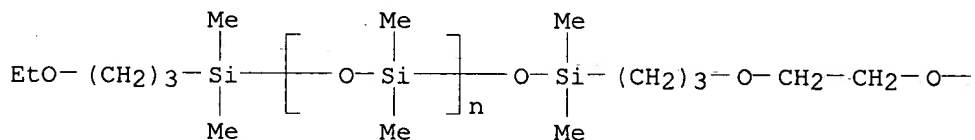
CM 1

CRN 470709-43-4

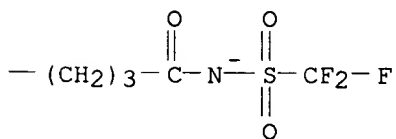
CMF (C2 H6 O Si)<sub>n</sub> C19 H39 F3 N O7 S Si2

CCI PMS

PAGE 1-A



PAGE 1-B

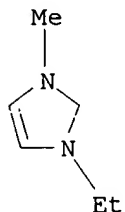


CM 2

CRN 65039-03-4

CMF C6 H11 N2





\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

RN 470709-46-7 HCAPLUS

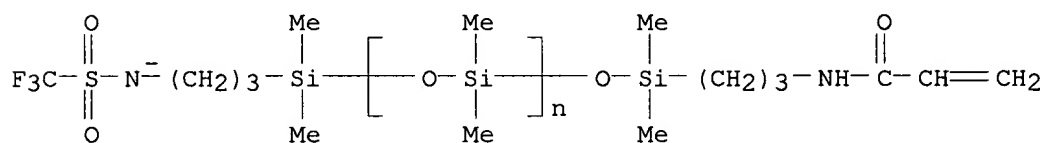
CN 1H-Imidazolium, 1-ethyl-3-methyl-, salt with  $\alpha$ -[dimethyl[3-  
 [(trifluoromethyl)sulfonyl]amino]propyl)silyl]- $\omega$ -[[dimethyl[3-[(1-  
 oxo-2-propenyl)amino]propyl)silyl]oxy]poly[oxy(dimethylsilylene)] (1:1)  
 (9CI) (CA INDEX NAME)

CM 1

CRN 470709-45-6

CMF (C2 H6 O Si)<sub>n</sub> C14 H28 F3 N2 O4 S Si2

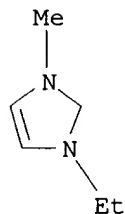
CCI PMS



CM 2

CRN 65039-03-4

CMF C6 H11 N2



\*\*\* FRAGMENT DIAGRAM IS INCOMPLETE \*\*\*

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